Technical Memorandum

Preliminary Engineering Evaluations For Raw Water Conveyance Systems In the North Yuba Water District

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September 25, 2015

Preliminary Engineering Evaluations for Raw Water Conveyance Systems

North Yuba Water District

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INTRODUCTION

Background

The North Yuba Water District (NYWD) provides treated and irrigation water to rural customers primarily within Yuba County, with a small portion of its service area located within Butte County. NYWD provides treated drinking water service to a population of approximately 3000 (approximately 800 connections) in the communities of Forbestown, Brownsville, Challenge, and Rackerby. NYWD also serves raw water to approximately 100 agricultural connections.

The NYWD receives surface water diverted from the South Fork of the Feather River and conveyed via the Forbestown Ditch. NYWD depends on this water supply to provide treated potable supplies and irrigation water to customers in the NYWD service areas. NYWD's raw water conveyance infrastructure has deteriorated over the years and currently does not meet operational requirements. The open and unlined conveyance systems are susceptible to both natural and human-caused pollutants, vandalism, damage due to fire, unauthorized withdrawals, and significant water loses. Most importantly, the current conveyance infrastructures do not reliably deliver the raw water capacities needed due to losses.

NYWD's conveyance systems include two major pieces of infrastructure:

- Forbestown Ditch; and
- Dobbins-Oregon House Canal (DOHC).

This open and largely unlined conveyance infrastructure causes excessive water loss. They experience, respectively, losses of leakage and evaporation of 50 and up to 70 percent of flows received. The excessive water loss results in: 1) limited water supply for irrigation customers, and 2) higher operating costs.

The open-channel, unlined Forbestown Ditch is also potentially causing water quality concerns at NYWD's Forbestown Water Treatment Plant (FWTP). The FWTP's Waste Discharge Requirements from NYWD's 2013 permit renewal requires significantly reduced aluminum concentrations from overflows at the FWTP's on-site storage reservoir. The on-site reservoir periodically overflows into an unnamed tributary of the New York Flat Creek. Any improvements to the raw-water conveyance systems should also consider reducing sediments and other pollutants entering the system. Therefore, the Forbestown Ditch and DOHC are NYWD's priority in terms of infrastructure capital investment and improvement, with the Forbestown Ditch being the singular priority due to its integral nature to both irrigation and

domestic water supply, as well as a component if the NYWD's contractual agreement with the South Feather Water and Power Authority.

In addition, NYWD is currently examining their rates structure, and is interested in knowing how their two raw water system "arteries" (Forbestown Ditch and DOHC) could be improved to function more efficiently and effectively. Having updated capital cost estimates for improving raw water conveyance systems will help NYWD build future water rates that will improve and sustain its water operations.

While NYWD is aware that its raw water conveyance improvements are priorities, they do not know the extent to which increased capacity will allow for new customers to connect into the system. This investigation will be part of future master planning for the NYWD. The Board has prioritized the preliminary engineering on the Forbestown Ditch and DOHC improvement projects as immediate needs to "staunch the bleeding" of water loss for the NYWD.

Objective

The NYWD is committed to meeting the level of service expected by its customers and providing reliable water supply. The evaluations, results, and recommendations summarized in this technical memorandum (TM) will help the NYWD make an informed decision on the preferred raw water conveyance improvement project. The evaluations performed considered the following:

- Preliminary construction costs;
- Feasibility of construction;
- Operation costs; and
- Costs versus benefits.

FORBESTOWN DITCH

The existing Forbestown Ditch was constructed in 1865 in native soils and in a forested area. In addition to the open nature of the Ditch, an approximately three-quarter-mile segment of the system was constructed in a steep downhill area (cascade section) that has led to considerable down-cutting caused by channel erosion. Due to the high velocity of the water along this stretch of the Ditch, down-cutting is anticipated to continue, leading to high silt loads during periods of substantial use, which occur annually.

The vegetation in the area adds to the total pollutant loading by contributing pine needles and other humic substances, and animal waste to the water. The natural soils underlying the Ditch allow substantial water losses over the approximately 10-mile length of the Ditch.

Basis for Preliminary Design

Based on discussions with NYWD, a targeted minimum capacity of 24 cubic feet per second (cfs) was assumed along the proposed pipeline from SF-14 to the Forbestown Water Treatment Plant (FWTP). Lacking a planning tool to aid in customer projections, this assumption is based on current amount of water discharged at SF-14 at the upper end of Forbestown Ditch. Table 1 summarizes the raw water distribution considered in this evaluation.

Table 1. Forbestown Raw Water Supply Capacity Distribution

Consumer	Raw Water Capacity
South Feather Water and Power Authority (SFWPA)	11 cfs
Domestic Water Supply	0.5 cfs
Irrigation Water Supply*	12.5 cfs
TOTAL	**24.0 cfs**

** Estimated raw water supply for irrigation if Forbestown Ditch has no water losses*

PROPOSED ALIGNMENT

To optimize capital costs while still providing a reliable water supply, NYWD requested maintaining the same alignment as the existing Forbestown Ditch. As noted previously, the Ditch is located within forested land. Also, there are existing private properties adjacent to the ditch that would limit significant deviations without obtaining property easements. Therefore, realignment of the ditch would possibly further delay the raw-water conveyance improvements.

No surveying field work was performed as part of this preliminary engineering effort. Instead, Google Earth approximations were used to create the plan and profile for the approximately 10-mile long Forbestown Ditch alignment. Figure 1 shows the site aerial map for existing the Ditch. The preliminary plan and profile drawings are included in Appendix A. Due to the limited data available, as well as the overall length of the ditch, this evaluation considered six segments as noted in table Table 2.

Table 2. Forbestown Ditch Alignment Information

Alignment Segment	*Beginning Station*	*Beginning Elevation (ft)*	*Ending Station*	*Ending Elevation (ft)*	*Pipe Length (ft)*	*Source or Location Comments*
A-B	0+00	3205	52+15	3163	5,215	STA 0+00 at SF-14 Woodleaf
B-C	52+15	3163	344+00	3111	29,185	STA 52+15 near Oroleve Creek
C-D	344+00	3111	385+01	3098	4,101	
D-E	385+01	3098	403+00	2899	1,799	
E-F	403+00	2899	426+00	2828	2,300	STA 426+00± near Costa Creek Turnout
F-G	426+00	2828	550+00	2775	12,400	STA 550+00± at Forbestown WTP

During the Board presentation on October 27, 2014, the NYWD Board of Directors requested an alternative alignment that would replace 21,000 feet of N-12 HDPE piping between the stations 110+00 to 320+00 with a 4,200 linear feet siphon. To accommodate the system pressures anticipated with a siphon, ductile iron piping is recommended and considered in this evaluation.

ALTERNATIVE IMPROVEMENTS

NYWD has previously studied the following alternatives to reducing the existing raw water losses:

- Lining the open-channel raw-water conveyances;
- Convert to gravity-feed piping along the entire length of the Forbestown Ditch and DOHC; and

- Convert to pressurized pipe after the Costa-Creek Turn-out.

This preliminary engineering evaluation builds upon the previous evaluations already performed on the NYWD's raw water conveyance systems. Lining the Ditch would still leave the raw-water conveyance system susceptible to sediments and other pollutants entering the system and impacting the water quality entering the FWTP. Therefore, lining the existing ditch was not considered beyond the feasibility comparison. The lining improvement would also still have high maintenance costs, liability, and safety risks.

Therefore, the evaluations summarized below focus on improving the existing raw-water conveyance systems using either gravity-feed and/or pressurized piping designs.

Figure 1. Forbestown Ditch Site Aerial Map

Insert Sheet 1 – Forbestown Ditch Site Plan (11x17 sheet)

PIPELINE MATERIALS

Pipe material was selected based on the hydraulic requirements of the system and funding limitations. For purposes of a feasibility comparison, the pipe material considered for the Forbestown Ditch and DOHC included:

- N-12 HDPE ADS pipe for gravity-flow sections;
- Concrete cloth for lining the ditch; and
- HDPE or ductile-iron pipe for pressurized piping sections.

For the Forbestown Ditch improvement, the evaluation focused on using only the N-12 HDPE ADS piping for gravity-flow sections and ductile iron piping for pressurized sections (e.g., siphon conditions).

N-12 High Density Polyethylene Advanced Drainage System (N-12 HDPE ADS)

N-12 HDPE ADS pipe has a smooth interior and a corrugated exterior and is used for storm water or drainage applications where hydraulics are important and durability is critical. The smooth interior allows maximum flow capacity while the corrugated exterior increases the structural strength. N-12 ADS pipe is also watertight between the bell and spigot joints, allowing for easier handling.

Concrete Cloth

In an effort to provide an alternate cost-effective solution to the existing Forbestown ditch, a concrete cloth was also considered. The roll is quick to install and flexible enough to conform to different curves and ditch profiles. Although the cloth rapidly forms into a waterproof concrete ditch within twenty four hours, exposure to the atmosphere does not relieve the NYWD from water quality issues, liability and maintenance concerns. Based on these issues, the concrete cloth was only examined as part of the feasibility comparison.

High Density Polyethylene (HDPE)

HDPE is water pressured pipe for municipal and industrial water transmission systems for potable water, sewer, drain, irrigation, and reclaimed water. Its butt-fused joints eliminate potential leak points. HDPE is highly resistant to corrosion and degradation. It is also lightweight and flexible, making installation easier.

HYDRAULIC EVALUATION

Flows within each segment of the piped system were determined for both a 30-inch and 36-inch diameter N-12 HDPE ADS pipe. Two types of calculations were considered as described below. Table 3 summarizes the flow capacities calculated for the 30-inch diameter piping using each method of calculation.

Manning's Equation

Manning's equation is commonly used to calculate flows in open-channel systems. Flow (Q) is calculated as a function of *n*, which a resistance or friction factor and varies depending on the roughness of the channel or piping. The other variables, *A* (cross-sectional area of the flow), *R* (hydraulic radius), and *S* (slope) are related to the piping design considered. To simplify the flow capacity calculations, a full-pipe assumption (e.g., *A* is equivalent to the pipe's cross-sectional area and *R* is equal to the inside perimeter of the pipe) was made.

$$Q = \frac{1.49}{n} A R^{2/3} S^{1/2}$$

FlowMaster Software

This software was developed by Bentley and is a hydraulic calculator for open channels (e.g. circular pipe). The software quickly performs hydraulic calculations. To calculate the piping flow capacities, the evaluation considered uniform flow conditions throughout the section of pipe. Full reports were generated for two pipe sizes: 30-inch and 36-inch diameters (see Appendix C).

Table 3. Forbestown Ditch –Capacity of a 30-inch Piping System Using Two Calculation Methods

Alignment Segment	*Beginning Station*	*Ending Station*	*Pipe Diam. (inches)*	*Calculated Velocity (fps)*	*Manning's Equation - Full Flow Capacity (cfs)*	*FlowMaster Capacity Calculation (cfs)*
A-B	0+00	52+15	30	8	37	37
B-C	52+15	344+00	30	4	17	17
C-D	344+00	385+01	30	5	23	23
D-E	385+01	403+00	30	28	137	136
E-F	403+00	426+00	30	15	72	72
F-G	426+00	550+00	30	5	27	27

Note: fps = feet per second, cfs = cubic feet per second

PIPE SIZING

Pipe sizes were determined along the existing Ditch alignment two ways:

- Based on an assumed flow of 24 cfs (see calculated diameter column), and
- Nominal diameter.

Table 4. Forbestown Ditch – Summary of Pipe Sizing Calculations

Alignment Segment	*Beginning Station*	*Ending Station*	*Average Slope (ft/ft.)*	*Assumed Net Flow (cfs)*	*Calculated Diameter (inch)*	*Next Nominal Diameter (inch)*
A-B	0+00	52+15	0.0081	24	26	36
B-C	52+15	344+00	0.0018	24	34	36
C-D	344+00	385+01	0.0032	24	30	36
D-E	385+01	403+00	0.1106	24	16	24
E-F	403+00	426+00	0.0309	24	20	24
F-G	426+00	550+00	0.0043	24	29	24

The nominal diameter result will help NYWD assess the benefits of additional capacity (beyond the targeted 24 cfs).

PIPELINE COSTS BASED ON MATERIAL

Estimates of probable construction costs were prepared for six options:

- Option 1A - 30-Inch N-12 HDPE ADS;
- Option 1B - 36-Inch N-12 HDPE ADS;
- Option 1C - 30-Inch N-12 HDPE ADS with Siphon;
- Option 1D - 36-Inch N-12 HDPE ADS with Siphon;
- Option 2 – Lining the Ditch with Concrete Cloth; and
- Option 3 – Pressurized HDPE Pipeline.

The construction cost subtotal include costs for mobilization; installation, clearing and grubbing of vegetation that may impede the proposed alignment; bypass operation costs to ensure water supply to the water treatment plant during construction; piping costs for 53,000 linear feet of Ditch; catch basins located approximately 1000 feet apart for access; channel transitions located at the top and bottom of the cascade section of the Forbestown Ditch due to the large elevation drops; Parshall flumes to provide flow measurements; and other required appurtenances or fittings for installation of the pipe.

Once the construction subtotal was determined, percentages were taken to estimate other related costs such as contingency (20 percent), engineering (10 percent), construction management and inspection (10 percent), permitting, licensing and mitigation (5 percent) and administration and legal costs (5 percent).

Table 5 through Table 10 summarizes the costs calculated for each Forbestown Ditch improvement option. A full breakdown of all of the costs is included in Appendix D.

Table 5. Forbestown Ditch Option 1A Project Cost Summary

Option 1A- Forbestown 30-Inch HDPE Pipeline Estimated Costs of Construction (28 cfs capacity)				
Item	**Unit**	**Quantity**	**Est. Unit Cost**	**Cost**
Mobilization (5% of construction cost)	LS	1	$ 145,000	$ 145,000
Installation (25% of material cost)	LS	1	$ 722,000	$ 722,000
Clearing and Grubbing (2% of construction cost)	LS	1	$ 58,000	$ 58,000
WTP supply during construction	LS	1	$ 50,000	$ 50,000
HDPE ADS Piping 30-Inch **	LF	53,000	$ 50	$ 2,650,000
Catch Basin (Oldcastle Precast)48"x48" *	EA	53	$ 2,100	$ 111,300
Channel Transitions (located at falls)	EA	2	$ 10,000	$ 20,000
Parshall Flume	EA	7	$ 5,000	$ 35,000
Fittings***	LS	1	$ 70,000	$ 70,000
CONSTRUCTION SUBTOTAL			(rounded)	**$ 3,862,000**
Contingency			20% of construction	$ 773,000
SUBTOTAL *(construction + contingency)*				**$ 4,635,000**
Engineering			10%	$ 464,000
CM/Inspection			10%	$ 464,000
Permitting & Licensing & Mitigation			5%	$ 232,000
Admin / Legal			5%	$ 232,000
TOTAL ESTIMATED PROJECT COST				**$ 6,027,000**

Table 6. Forbestown Ditch Option 1B Project Cost Summary

Option 1B- Forbestown 36-Inch HDPE Pipeline Estimated Costs of Construction (45 cfs capacity)				
Item	**Unit**	**Quantity**	**Est. Unit Cost**	**Cost**
Mobilization (5% of construction cost)	LS	1	$ 190,000	$ 190,000
Installation (25% of material cost)	LS	1	$ 946,000	$ 946,000
Clearing and Grubbing (2% of construction cost)	LS	1	$ 76,000	$ 76,000
WTP supply during construction	LS	1	$ 50,000	$ 50,000
HDPE ADS Piping 36-Inch **	LF	53,000	$ 66	$ 3,498,000
Catch Basin (Oldcastle Precast)48"x48" *	EA	53	$ 2,100	$ 111,300
Channel Transitions (located at falls)	EA	2	$ 15,000	$ 30,000
Parshall Flume	EA	7	$ 8,000	$ 56,000
Fittings***	LS	1	$ 87,000	$ 87,000
CONSTRUCTION SUBTOTAL			(rounded)	**$ 5,045,000**
Contingency			20% of construction	$ 1,009,000
SUBTOTAL *(construction + contingency)*				**$ 6,054,000**
Engineering			10%	$ 606,000
CM/Inspection			10%	$ 606,000
Permitting & Licensing & Mitigation			5%	$ 303,000
Admin / Legal			5%	$ 303,000
TOTAL ESTIMATED PROJECT COST				**$ 7,872,000**

Table 7. Forbestown Ditch Option 1C Project Cost Summary

Option 1C- Forbestown 30-Inch N-12 HDPE ADS Pipeline Estimated Costs of Construction (28 cfs capacity)				
Item	**Unit**	**Quantity**	**Est. Unit Cost**	**Cost**
Mobilization (5% of construction cost)	LS	1	$ 171,000	$ 171,000
Installation (25% of material cost)	LS	1	$ 854,000	$ 854,000
Clearing and Grubbing (2% of construction cost)	LS	1	$ 69,000	$ 69,000
WTP supply during construction	LS	1	$ 50,000	$ 50,000
HDPE ADS Piping 30-Inch **	LF	32,000	$ 66	$ 2,112,000
DIP piping, 24-Inch (for SIPHON)	LF	4,200	$ 267	$ 1,121,400
Catch Basin (Oldcastle Precast)48"x48" *	EA	32	$ 2,500	$ 80,000
Channel Transitions (located at falls)	EA	2	$ 10,000	$ 20,000
Parshall Flume	EA	7	$ 5,000	$ 35,000
Fittings***	LS	1	$ 44,000	$ 44,000
CONSTRUCTION SUBTOTAL			(rounded)	**$ 4,557,000**
Contingency			20% of construction	$ 912,000
SUBTOTAL *(construction + contingency)*				**$ 5,469,000**
Engineering			10%	$ 547,000
CM/Inspection			10%	$ 547,000
Permitting & Licensing & Mitigation			5%	$ 274,000
Admin / Legal			5%	$ 274,000
TOTAL ESTIMATED PROJECT COST				**$ 7,111,000**

Table 8. Forbestown Ditch Option 1D Project Cost Summary

Option 1D- Forbestown 36-Inch N-12 HDPE ADS Pipeline Estimated Costs of Construction (45 cfs capacity)				
Item	**Unit**	**Quantity**	**Est. Unit Cost**	**Cost**
Mobilization (5% of construction cost)	LS	1	$ 203,000	$ 203,000
Installation (25% of material cost)	LS	1	$ 1,013,000	$ 1,013,000
Clearing and Grubbing (2% of construction cost)	LS	1	$ 81,000	$ 81,000
WTP supply during construction	LS	1	$ 50,000	$ 50,000
HDPE ADS Piping 36-Inch **	LF	32,000	$ 85	$ 2,720,000
DIP piping, 24-Inch (for SIPHON)	LF	4,200	$ 267	$ 1,121,400
Catch Basin (Oldcastle Precast)48"x48" *	EA	32	$ 2,100	$ 67,200
Channel Transitions (located at falls)	EA	2	$ 15,000	$ 30,000
Parshall Flume	EA	7	$ 8,000	$ 56,000
Fittings***	LS	1	$ 54,000	$ 54,000
CONSTRUCTION SUBTOTAL			(rounded)	$ 5,396,000
Contingency			20% of construction	$ 1,079,000
SUBTOTAL (construction + contingency)				**$ 6,475,000**
Engineering			10%	$ 648,000
CM/Inspection			10%	$ 648,000
Permitting & Licensing & Mitigation			5%	$ 324,000
Admin / Legal			5%	$ 324,000
TOTAL ESTIMATED PROJECT COST				**$ 8,420,000**

Table 9 Forbestown Ditch Option 2 Project Cost Summary

Option 2- Forbestown Concrete Lined Ditch Estimated Costs of Construction				
Item	**Unit**	**Quantity**	**Est. Unit Cost**	**Cost**
Mobilization (5% of construction cost)	LS	1	$ 297,000	$ 287,000
Concrete Cloth 5mm	LF	53,000	$ 108	$ 5,724,000
CONSTRUCTION SUBTOTAL			(rounded)	**$ 6,011,000**
Contingency			20% of construction	$ 1,247,000
SUBTOTAL *(construction + contingency)*				**$ 7,213,200**
Engineering / CM			25%	$ 1,803,000
Permitting & Licensing & Mitigation			10%	$ 721,320
Admin / Legal			5%	$ 360,660
TOTAL ESTIMATED PROJECT COST				**$ 10,099,000**

Table 10. Forbestown Ditch Option 3 Project Cost Summary

Option 3- Forbestown 30-Inch Pressurized HDPE Pipeline Estimated Costs of Construction				
Item	**Unit**	**Quantity**	**Est. Unit Cost**	**Cost**
Mobilization (5% of construction cost)	LS	1	$ 44,000	$ 44,000
Clearing and Grubbing (2% of construction cost)	LS	1	$ 206,000	$ 206,000
WTP supply during construction	LS	1	$ 50,000	$ 50,000
30-inch HDPE (AWWA) Piping (10.4Miles) **	LF	1	$ 177	$ 9,381,000
Catch Basin (Oldcastle Precast)48"x48" *	EA	53,000	$ 2,900	$ 153,700
Hydropower Generation Facility	LS	53	$ 300,000	$ 300,000
Fittings***	LS	1	$ 426,000	$ 426,000
CONSTRUCTION SUBTOTAL			(rounded)	**$ 10,560,000**
Contingency			20% of construction	$ 2,112,140
SUBTOTAL *(construction + contingency)*				**$ 12,672,840**
Engineering/CM			25%	$ 3,168,210
Permitting & Licensing & Mitigation			5%	$ 1,267,284
Admin / Legal			5%	$ 633,642
TOTAL ESTIMATED PROJECT COST				**$ 17,742,000**

Feasibility Comparison

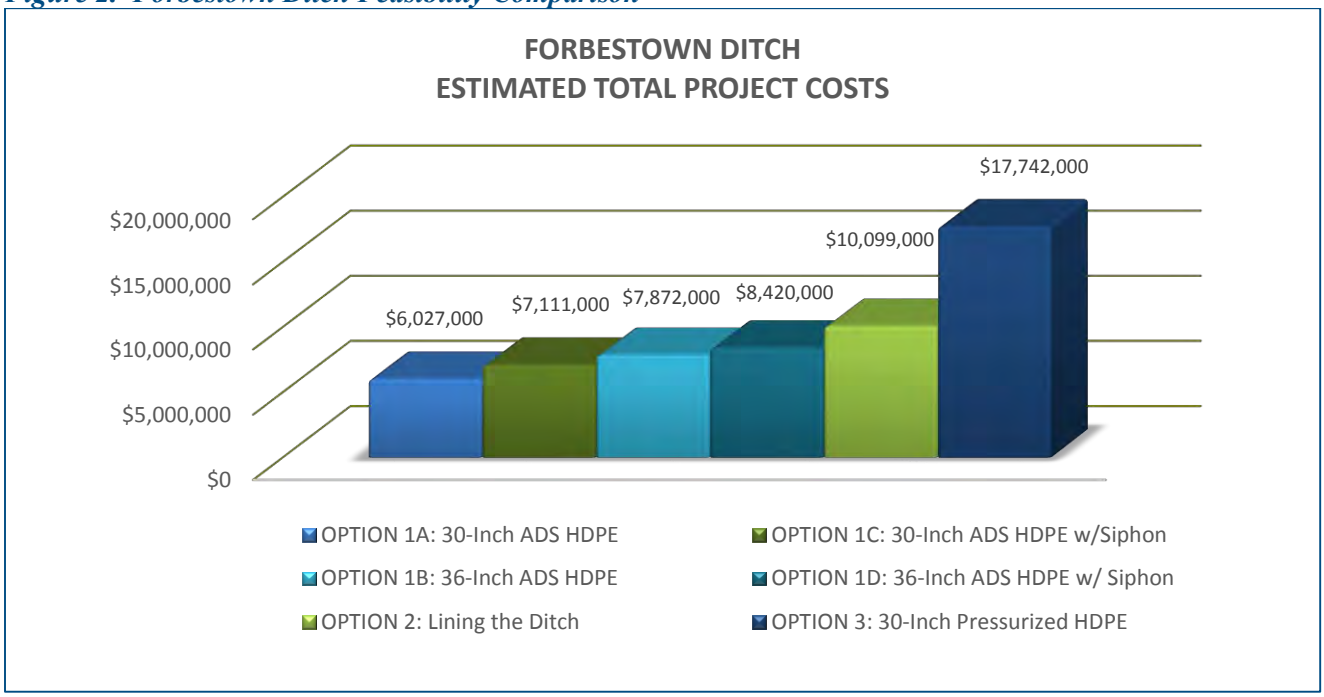
The feasibility of each option were compared in relation to the calculated capacity, total cost of construction, and total estimated project costs as shown in Table 11 and Figure 2.

Table 11. Forbestown Ditch Improvement – Feasibility Comparison

Option	Pipe Material	Calculated Capacity	Total Construction Cost	Total Estimated Project Cost
Option 1A – 30-IN Pipe	N-12 HDPE ADS	28 cfs	$4,635,000	$6,027,000
Option 1B – 36-IN Pipe	N-12 HDPE ADS	45 cfs	$6,054,000	$7,872,000
Option 1C – 30-IN Pipe	N-12 HDPE ADS; DIP at Siphon	28 cfs	$5,469,000	$7,111,000
Option 1D – 36-IN Pipe	N-12 HDPE ADS; DIP at Siphon	45 cfs	$6,475,000	$8,420,000
Option 2 - Lining	(w/concrete cloth)	24 cfs	$7,213,200	$10,009,000
Option 3 – 30-IN Pipe	AWWA HDPE	28 cfs	$12,672,800	$17,742,000

Note: Construction costs include 20 percent contingency. Total project costs include estimated engineering, construction management and inspection, permitting, administrative, and legal fees.

Figure 2. Forbestown Ditch Feasibility Comparison



The following observations were noted from the above comparisons:

- N-12 HDPE ADS piping is a more cost effective option as compared to the other piping material and ditch lining options.
- Increasing the pipe diameter from 30-inch to a 36-inch, will yield a 61 percent capacity increase but with an additional 1.8 million dollars total project cost (based on N-12 HDPE ADS piping).
- Option 1D (installing a DIP siphon to eliminate 21,000 LF of 36-inch N-12 HDPE ADS pipe) will cost approximately $550,000 more than Option 1B (all N-12 HDPE ADS piping) due to the DIP material cost for the siphon section.

Conclusion and Recommendation

Based on the feasibility comparison observations noted above, the following are recommended for the Forbestown Ditch raw-water conveyance improvement project:

- Base final design on installation of 36-inch diameter N-12 HDPE ADS piping along the entire existing alignment of the Ditch with the exception of the cascade section. Provide bedding and backing as recommended by the piping manufacture to maintain pipe integrity.
- Provide concrete catch basins every 1000-feet, approximately, to protect the pipe from vacuum conditions and to provide access for monitoring and cleaning of the pipe.
- In the cascade section of the Ditch, evaluate the following options further:
    - Leave section of Ditch as open-channel (either lined or unlined). Install concrete catch basins at the upstream (to allow water to flow into the open-channel section) and downstream sections of the cascade (to recapture the flows into the pipe).
    - Transition piping from N-12 HDPW ADS piping to pressured piping (e.g., DIP) to maintain an enclosed system. Install concrete catch basins at the top and bottom of the cascade section to allow for air intake and exhaust and to minimize vacuum conditions. Evaluate whether an AWWA HDPE pipe may handle the pipe pressures possible at the cascade section of the Ditch.

- Avoid any changes in Ditch alignment to minimize cost and allow the project to proceed more quickly.

Table 12. Estimated Cost Benefit for Forbestown Ditch Users

Consumer	Estimated RW Distribution	Estimated Cost Benefit
South Feather Water and Power Authority (SFWPA)	11 cfs	$3,575,000
Domestic Water Supply	0.5 cfs	$162,500
Irrigation Water Supply*	12.5 cfs	$4,062,500
TOTAL	**24.0 cfs**	**$7, 800,000**

*Based on 36-IN N-12 HPDE Piping of the entire alignment

DOBBINS-OREGON HOUSE CANAL

DOHC provides agricultural water to NYWD's eastern water service area. NYWD does not provide treated water to the communities within the DOHC service area; these communities rely on groundwater wells for potable water use. Raw water is diverted into the DOHC through the Dry Creek Diversion from three sources:

- From Forbestown Ditch at the Costa Creek turnout;
- From FWTP (routed through New York Creek and eventually into Dry Creek); and
- Natural flows in Dry Creek diverted under License 12984.

Water from the Forbestown Ditch is released to the Costa Creek turnout into Costa Creek. The raw water then flows down Costa and Dry Creek to the DOHC., Water from FWTP can be released to New York Creek, which then flows to Dry Creek and is diverted to DOHC at the Dry Creek Diversion.

The existing conveyance capacity of the DOHC is limited by the Dry Creek Diversion structure, which has the capacity to divert up to 13 cfs. Similar to the Forbestown Ditch, the DOHC conveyance system also experiences significant water losses: up to 60 percent of flow diverted.

Basis for Design

Based on discussions with NYWD, a targeted minimum capacity of 15 cfs was considered for any raw water conveyance improvement projects. Similar to the reasoning behind the Forbestown Ditch piping, a pipeline is proposed to convey raw water from the Dry Creek Diversion to the Oregon House Terminus and also from Walter's Wye to the Frenchtown Terminus.

PROPOSED ALIGNMENT

The proposed alignment assumes the path of the existing DOHC starting from the Dry Creek Diversion to Oregon House Terminus and also from Walter Wye to Frenchtown Terminus. This proposed alignment also assumes no deviation from the existing ditch due to privately owned property.

No surveying field work was requested as part of this preliminary engineering effort for the DOHC system. Instead, Google Earth was used to create a plan and profile along the 19-mile alignment, with stations and elevations identified using Google Earth approximations. Figure 3 shows the approximated existing alignment of the DOHC. The preliminary plan and profile drawings are included in Appendix B. Due to the limited data available and the length of the canal, this evaluation considered nine segments as noted in Table 13.

Table 13. DOHC Alignment Information

Alignment Segment	Beginning Station	Beginning Elevation (ft)	Ending Station	Ending Elevation (ft)	Pipe Length (ft)	Source or Location
A1-B1	0+00	2026	328+00	1953	32,800	Dry Creek Diversion at STA 0+00
B1-C1	328+00	1953	460+00	1877	13,200	Walter's Wye at STA 460+00
C1-D1	460+00	1877	638+00	1804	17,800	
D1-E1	638+00	1804	807+00	1789	16,900	
E1-F1	807+00	1789	856+00	1716	4,900	Oregon House Terminus at STA 856+00
A2-B2	0+00	1876	57+00	1843	5,700	Walter's Wye at STA 0+00
B2-C2	57+00	1876	75+00	1671	1,800	
C2-D2	75+00	1671	118+00	1664	4,300	
D2-E2	118+00	1664	147+00	2900	4,300	Frenchtown Terminus at STA 147+00

Figure 3. DOHC Site Aerial Map

Insert 11x17 Sheet 1

ALTERNATIVE IMPROVEMENTS

Similar to the Forbestown Ditch evaluation process, the DOHC evaluation focused on alternatives that convert the conveyance systems to piping along the entire length of the canal. This preliminary design evaluation did not investigate options to serve additional agricultural customers. No changes in alignment were considered as part of this evaluation.

PIPELINE MATERIALS

The pipeline materials considered were similar to the Forbestown Ditch evaluation:

- N-12 HDPE ASD pipe for gravity-flow sections, and
- HDPE or Ductile-iron pipe for pressured piping sections.

HYDRAULIC EVALUATION

Flows along reach

Flows were determined for 18-inch, 24-inch and 36-inch diameter N-12 HDPE ADS pipe along the proposed alignment. The hydraulic calculations were similar to the approaches used for the Forbestown Ditch: Manning's Equation, and Bentley's FlowMaster software.

Pipe sizing

Pipe sizes were determined along the proposed alignment two ways:

- Based on an assumed flow of 15 cfs to reliably meet existing irrigation water demands; and
- Nominal diameter (to assess benefits of additional capacity beyond the targeted 15 cfs, which may allow for irrigation service to future customers).

Table 14. DOHC – Summary of Pipe Sizing Calculations

Alignment Segment	*Beginning Station*	*Ending Station*	*Average Slope (ft/ft)*	*Assumed Net Flow (cfs)*	*Calculated Diameter (inch)*	*Nominal Diameter (inch)*
A1-B1	0+00	328+00	0.0022	15	27	30
B1-C1	328+00	460+00	0.0058	15	24	30
C1-D1	460+00	638+00	0.0041	15	24	30
D1-E1	638+00	807+00	0.0009	15	32	30
E1-F1	807+00	856+00	0.0149	15	19	24
A2-B2	0+00	57+00	0.0058	15	23	24
B2-C2	57+00	75+00	0.1139	15	13	24
C2-D2	75+00	118+00	0.0016	15	29	24
D2-E2	118+00	147+00	0.0221	15	18	18

PIPELINE COSTS BASED ON MATERIAL

Estimates of probable construction costs were prepared for four options:

- Option 1A - 24-Inch N-12 HDPE ADS (10.7 cfs capacity);
- Option 1B - 30-Inch N-12 HDPE ADS (19 cfs capacity);
- Option 2 – Lining the Ditch with Concrete Cloth (5 millimeters thick); and
- Option 3 – 30-Inch Pressurized HDPE Pipeline (19 cfs capacity).

The construction cost subtotal include costs for mobilization; installation, clearing and grubbing of vegetation that may impede the proposed alignment; bypass operation costs to ensure water supply to the water treatment plant during construction; piping costs for 102,000 linear feet; catch basins located approximately 1000 feet apart; Parshall flumes to provide flow measurements; and any other appurtenances or fittings for installation of the pipe.

Once the construction subtotal was determined, percentages were taken to estimate other related costs such as contingency (20 percent), engineering (10 percent), construction management and inspection (10 percent), permitting, licensing and mitigation (5 percent) and administration and legal costs (5 percent). These are based on industry-accepted estimates of these costs.

Table 15 through Table 18 summarizes the costs calculated for each DOHC improvement option. A full breakdown of all of the costs is included in Appendix D.

Table 15. DOHC Option 1A Project Cost Summary

Option 1A- DOH 24-Inch N-12 HDPE ADS Pipeline Estimated Costs of Construction (10.7 cfs capacity)				
Item	**Unit**	**Quantity**	**Est. Unit Cost**	**Cost**
Mobilization (5% of construction cost)	LS	1	$ 192,000	$ 192,000
Installation (25% of material cost)	LS	1	$ 958,000	$ 958,000
Clearing and Grubbing (2% of construction cost)	LS	1	$ 77,000	$ 77,000
WTP supply during construction	LS	1	$ 100,000	$ 100,000
HDPE ADS Piping 24-Inch **	LF	102,000	$ 34	$ 3,468,000
Catch Basin (Oldcastle Precast)48"x48" *	EA	102	$ 2,100	$ 214,300
Parshall Flume	EA	10	$ 3,000	$ 30,000
Fittings***	LS	1	$ 119,000	$ 119,000
CONSTRUCTION SUBTOTAL			(rounded)	**$ 5,159,000**
Contingency			20% of construction	$ 1,032,000
SUBTOTAL *(construction + contingency)*				**$ 6,191,000**
Engineering			10%	$ 620,000
CM/Inspection			10%	$ 620,000
Permitting & Licensing & Mitigation			5%	$ 310,000
Admin / Legal			5%	$ 310,000
TOTAL ESTIMATED PROJECT COST				**$ 8,051,000**

Table 16. DOHC Option 1B Project Cost Summary

Option 1B- DOH 30-Inch N-12 HDPE ADS Pipeline Estimated Costs of Construction (19 cfs capacity)				
Item	**Unit**	**Quantity**	**Est. Unit Cost**	**Cost**
Mobilization (5% of construction cost)	LS	1	$ 240,000	$ 240,000
Installation (25% of material cost)	LS	1	$ 1,196,000	$ 1,196,000
Clearing and Grubbing (2% of construction cost)	LS	1	$ 96,000	$ 96,000
WTP supply during construction	LS	1	$ 100,000	$ 100,000
HDPE ADS Piping 30-Inch **	LF	102,000	$ 43	$ 43
Catch Basin (Oldcastle Precast)48"x48" *	EA	102	$ 2,100	$ 2,100
Parshall Flume	EA	10	$ 5,000	$ 5,000
Fittings***	LS	1	$ 132,000	$ 132,000
CONSTRUCTION SUBTOTAL			(rounded)	**$ 6415,000**
Contingency			20% of construction	$ 1,283,000
SUBTOTAL *(construction + contingency)*				**$ 7,698,000**
Engineering			10%	$ 770,000
CM/Inspection			10%	$ 770,000
Permitting & Licensing & Mitigation			5%	$ 385,000
Admin / Legal			5%	$ 385,000
TOTAL ESTIMATED PROJECT COST				**$ 10,008,000**

Table 17. DOHC Option 2 Project Cost Summary

Option 2- DOH Concrete Lined Ditch Estimated Costs of Construction				
Item	**Unit**	**Quantity**	**Est. Unit Cost**	**Cost**
Mobilization (5% of construction cost)	LS	1	$ 1,102,000	$ 1,102,000
Concrete Cloth 5mm (material and installation)	LF	102,000	$ 108	$ 11,016,000
CONSTRUCTION SUBTOTAL			(rounded)	**$ 12,118,000**
Contingency			20% of construction	$ 2,423,000
SUBTOTAL *(construction + contingency)*				**$ 14,541,600**
Engineering / CM			25%	$ 3,635,400
Permitting & Licensing & Mitigation			10%	$ 1,454,160
Admin / Legal			5%	$ 727,080
TOTAL ESTIMATED PROJECT COST				**$ 20,359,000**

Table 18. DOHC Option 3 Project Cost Summary

Option 3- Forbestown 30-Inch Pressurized HDPE Pipeline Estimated Costs of Construction					
Item	**Unit**	**Quantity**	**Est. Unit Cost**	**Cost**	
Mobilization (5% of construction cost)	LS	1	$1,682,000	$1,682,000	
Clearing and Grubbing (2% of construction cost)	LS	1	$4,205,000	$4,205,000	
WTP supply during construction	LS	1	$337,000	$337,000	
30-inch HDPE (AWWA) Piping (10.4Miles) **	LF	1	$162	$16,524,000	
Catch Basin (Oldcastle Precast)48"x48" *	EA	53,000	$2,900	$127,600	
Hydropower Generation Facility	LS	53	$167,000	$167,000	
Fittings***	LS	1	$1,682,000	$1,682,000	
CONSTRUCTION SUBTOTAL			(rounded)	**$**	**23,042,600**
Contingency			20% of construction	$	4,608,520
SUBTOTAL *(construction + contingency)*				**$**	**27,651,120**
Engineering/CM			25%	$	6,912,780
Permitting & Licensing & Mitigation			10%	$	2,765,112
Admin / Legal			5%	$	1,382,556
TOTAL ESTIMATED PROJECT COST				**$**	**38,712,000**

Feasibility Comparison

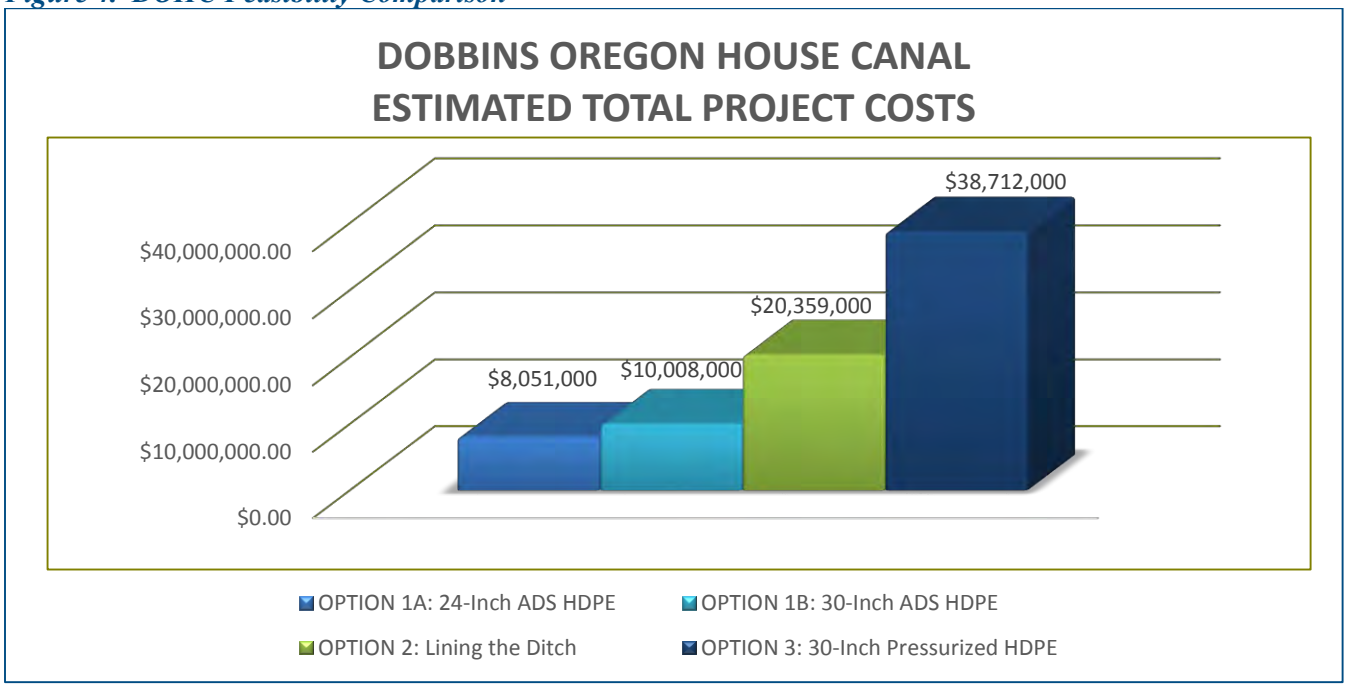
The feasibility of each option was compared in relation to the calculated capacity, total cost of construction, and total estimated project costs as shown in Table 19 and Figure 4.

Table 19. DOHC Conveyance Improvement – Feasibility Comparison

Option	Pipe Material	Calculated Capacity	Total Construction Cost	Total Estimated Project Cost
Option 1A – 24-IN Pipe	N-12 HDPE ADS	10.7 cfs	$6,191,000	$8,051,000
Option 1B – 30-IN Pipe	N-12 HDPE ADS	19 cfs	$7,698,000	$10,008,000
Option 2 - Lining	(5mm concrete cloth)	13 cfs	$14,514,600	$20,359,000
Option 3 – 30-IN Pipe	AWWA HDPE	19 cfs	$27,651,200	$38,712,000

Note: Construction costs include 20 percent contingency. Total project costs include estimated engineering, construction management and inspection, permitting, administrative, and legal fees.

Figure 4. DOHC Feasibility Comparison



The following observations were noted from the above comparisons:

- N-12 HDPE ADS piping continues to be the most cost effective piping material option, and
- Increasing the pipe diameter from 24-inch to 30-inch yields an 83 percent capacity increase with an additional 1.9 million dollars total project costs (based on N-12 HDPE ADS piping).

Conclusion and Recommendation

Based on the feasibility comparison observations noted above, the following are recommended for the DOHC raw-water conveyance improvement project:

- Base final design on installation of 30-inch diameter N-12 HDPE ADS piping along the entire existing alignment of the DOHC conveyance system. Provide bedding and backing as recommended by the piping manufacture to maintain pipe integrity.
- If improvements are phased, evaluate reducing the pipeline diameters downstream of Walter's Wye. Additional information on water demands are needed for this evaluation.
- Provide concrete catch basins every 1000-feet, approximately, to protect the pipe from vacuum conditions and to provide access for monitoring and cleaning of the pipe.

OTHER RAW WATER INFRASTRUCTURE IMPROVEMENTS

Colgate Penstock Project

This evaluation provides only a high-level conceptual plan for the Colgate Penstock raw water conveyance project. The Colgate Penstock Project is envisioned by NYWD as a potential additional source of raw water to the DOHC agricultural users.

BASIS FOR EVALUATION

This preliminary planning evaluation considered the following project elements:

- Deliver water from New Bullards Bar Reservoir and connect to the DOHC. The water would feed into the flume near Ingersol Airport and flow into the DOHC near Fountainhouse Road.
- Install a valve at the penstock connected to New Bullards Bar Reservoir, at approximately the elevation of the Dobbins-Oregon House Canal (DOHC), or about 1,600 feet.
- Install a booster pumping station near the New Bullards Bar Reservoir. The pumping station will be sized for:
    - Flow of 13 cfs to match the existing maximum capacity of the DOHC; and
    - Operating head will be sized to deliver water over Oregon Peak and to discharge into the DOHC.
- Install ductile-iron piping within the booster pumping station.
- Install a facility at the end of this diversion, connecting it to the DOHC near Ingersol Airport and Fountainhouse Road (at approximately Station 490+00 along the reach to Oregon House Terminus). At this location, flows from New Bullards Bar would primarily benefit irrigators located between Walter's Wye and Oregon House Terminus.
- Install pressure pipeline from the booster pumping station to the flume near Ingersol Airport (approximately 7.5 miles of pipeline). The preliminary planning cost estimates is based on installing the pipeline with minimum cover and adjacent to Marysville Road.

PRELIMINARY COST ESTIMATE

Estimates of probable construction costs were prepared based on the project elements noted above. Table 20 summarizes the preliminary planning level cost estimate for this project. The construction cost subtotal include costs for mobilization; installation, clearing and grubbing of vegetation on the booster pumping station site and that may impede the proposed pressurized pipeline alignment; flow meter at the booster pumping site to provide flow measurements; piping costs for 7.5 miles of ductile iron piping; and any other appurtenances or fittings for installation of the pipe. The project costs do not include those costs related to actual water supply to fill the pipe, legal and political negotiations with the Yuba County Water Agency to implement this project and purchase water, or other socio-political costs related to making the project a political reality.

Once the construction subtotal was determined, percentages were taken to estimate other related costs such as contingency (20 percent), engineering (10 percent), construction management and inspection (10 percent), permitting, licensing and mitigation (5 percent) and administration and legal costs (5 percent).

Table 20. Planning Level Cost Estimate for Proposed Colgate Penstock Project

Colgate Penstock Project (13 cfs diversion to DOH Canal from New Bullards Bar Reservoir)				
Item	**Unit**	**Quantity**	**Est. Unit Cost**	**Cost**
Mobilization	LS	1	$956,000	$956,000
Installation (25% of material cost)	LS	1	$2,415,000	$2,415,000
Clearing and Grubbing (2% of construction cost)	LS	1	$192,000	$192,000
Booster Pumping Station and Building	LS	1	$500,000	$500,000
Penstock Valve and Connection at New Bullards Bar Reservoir	LS	1	$100,000	$100,000
DIP Piping 24" (7.5 Miles)	LF	40,000	$238	$9,520,000
Fittings	LS	1	$38,000	$38,000
CONSTRUCTION SUBTOTAL			(rounded)	**$13,721,000**
Contingency		20%	of construction	$2,744,200
SUBTOTAL *(construction + contingency)*				**$16,465,200**
Engineering / CMS		25%		$4,116,300
Permitting & Licensing & Mitigation		10%		$1,646,520
Admin / Legal		5%		$823,260
TOTAL ESTIMATED PROJECT COST				**$23,052,000**

PROJECT RECOMMENDATIONS

If the NYWD is interested in pursuing this project, initial negotiations with the Yuba County Water Agency are necessary. The NYWD does not hold water rights on the Yuba River, and so would need to negotiate a purchase price and amount for the water deemed necessary to serve the DOHC customers who would physically be able to take it.

After the NYWD has a price and amount of water available, it would behoove NYWD to assess irrigator interest in this water prior to proceeding. While this water source may be more reliable than current water resources available to irrigators, the cost of this water will likely be significantly greater. In addition, this intertie's DOHC point of connection is more than half-way down the DOHC alignment and along the Oregon House terminus. Therefore, this source water will be available for only irrigators located along less than half of the total DOHC alignment. Thus, the significant capital costs will be spread among a smaller number of customers. It will be important that the NYWD understand the level of interest in this water source prior to committing any resources toward design or construction, or any contractual commitment for water purchase.

New York Flat Reservoir

As defined by the Department of Water Resources in Bulletin 115, Yuba and Bear Rivers Basin Investigation (1964; pages 209-221):

> *"This project would provide a dependable water supply at the reservoir of about 8,900 acre-feet per year for irrigation of lands situated in the vicinity of Dobbins and Oregon House. … Storage would be provided by a dam and reservoir on New York Creek to develop the natural runoff of the stream and provide control of imports to the reservoir from the Forbestown Ditch. … Based on results of geologic exploration, the New York Flat damsite appears suitable for construction of an earthenfill dam to a height adequate to provide 30,000 acre-feet of storage capacity."*

BASIS FOR EVALUATION

Basic project facts from DWR's Bulletin 115 include the following:

- Timeline: A projected timetable for reservoir development looked at a completion date of 2010, if it were begun in 1965, indicating a 50-year project.
- Project Benefits and Cost: The ratio of benefits to costs was calculated at approximately 54 percent, suggesting that the benefits are approximately half the cost of the project (or about $4.11 million in benefits to $7.56 million in costs, in 1965 dollars).
- Water Supply Cost: The initial water cost estimate is suggested to be about $4.35/acre foot.
- Archeological Investigation: Initial archeological investigation indicated the presence of a historic Nisenan village within the inundation area (from Archeological Reconnaissance of the Proposed New York Flat Reservoir Project Yuba County, California. Keith L. Johnson. 1974)[1].

PRELIMINARY COST ESTIMATE

A detailed cost estimate was prepared for the original project in 1963. Estimates of probable construction costs were adjusted for present-day costs. Table 21 summarizes the updated planning level cost estimate for this project.

The project costs do not include those costs related to actual water supply to fill the reservoir, legal and political negotiations to implement this project and purchase water, or other socio-political costs related to making the project a political reality.

After adjusting construction cost subtotal, percentages were used to estimate other related costs such as contingency (20 percent), engineering (10 percent), and administration costs (5 percent).

Table 21. Updated Planning Level Cost Estimate for the Proposed New York Flat Reservoir Project

		Original 1963 Estimates[2]		Adjusted for 2014[3]	
Capital Costs		**4% Interest**	**No Interest**	**4% Interest**	**No Interest**
Reservoir and Improvements		$93,000	$93,000	$719,492	$719,492
Dam Embankment		$585,000	$585,000	$4,525,836	$4,525,836
Spillway		$145,000	$145,000	$1,121,788	$1,121,788
Outlet works		$72,000	$72,000	$557,026	$557,026
Distribution system		$387,000	$387,000	$2,994,014	$2,994,014
SUBTOTAL		**$1,282,000**	**$9,918,156**	**$9,918,156**	**$9,897,040**
Contingencies	20%	$256,400	$256,400	$1,983,631	$1,983,631
SUBTOTAL		**$1,538,400**	**$11,901,787**	$11,901,787	**$11,876,448**
Engineering and Administration	15%	$230,760	$230,760	$1,785,268	$1,785,268
SUBTOTAL		**$1,769,160**	**$13,687,055**	$13,687,055	**$13,657,915**
Interest During Construction		$31,000	$0	$239,320	$0
SUBTOTAL		**$1,800,160**	**$13,926,375**	$13,687,055	**$13,657,915**
Less Funds Received From OWID		$0	($500,000)	$0.00	($3,868,236)
SUBTOTAL CAPITAL COST		$1,800,160	$13,926,375	$9,818,820	$9,797,915
Environmental Mitigation				$100,000	$100,000
TOTAL CAPITAL COST		**$1,800,160**	**$1,269,160**	**$14,026,375**	**$9,918,820**

[1] Cited from http://core.tdar.org/document/126920, accessed August 29, 2014.

[2] Taken directly from Table 40 in the California Department of Water Resources' Bulletin 115, 1964.

[3] Cited from http://www.bls.gov/data/inflation_calculator.htm, accessed January 20, 2015.

CONCLUSIONS AND RECOMMENDATIONS

While the policy-making process was likely quite different in 1964, and many of the values estimated during that time have likely changed, a project with a negative ratio of benefits to costs would likely not be pursued in current times. In addition, changed conditions would now significantly affect the cost of water to fill the reservoir: water above the baseline 3,700 acre feet will cost the amount of forgone power, per the 2005 agreement with the South Feather Water and Power Authority. This ranges between $75 and $125/ acre foot. Depending on the year and how Dry Creek is flowing, the cost of filling a new reservoir could be upwards of $2.25 million for the water. In addition, the water rights allocated to this project were revoked by the State Water Resources Control Board due to non-construction.

The current environment – political, financial, and environmental – for building a new reservoir is challenging:

- Political considerations: The NYWD customers currently do not use all of the water to which they have rights and permits, however, there are customers in the agricultural section of the NYWD who purportedly would use this water were it available at a reasonable price. Whether the price would be reasonable, and whether there would be an adequate number of customers among which to spread the cost of resource development, has not been proven. It is possible that the southern portion of the NYWD could be piped for a pressurized and treated system, but the political and financial willingness of regional inhabitants is not to the point where this would be considered.
- Financial considerations: The majority of the NYWD service area is considered disadvantaged based on an evaluation of median household income for the region in the most recent census (2010 – 80 percent or less of MHI within census blocks). The study, design, legal process, and construction of the reservoir was measured at $7.56 million in 1963 dollars (Table 48, page 220 of DWR's Bulletin 115 (1964)), and is likely much higher now due to inflation and the general rise in the cost of doing business. In addition, most of the reservoir inundation area is considered private property, and while some of the parcels within the construction and inundation area have been purchased based on eminent domain, negotiation and purchase would still be required for most of affected properties. Split between the total NYWD service connections (approximately 900 in 2014), the burden of paying for a project such as the New York Flat Reservoir, especially in the face of very limited projected development (and new connection fees), is quite high for any customer base, let alone one partially identified as disadvantaged (under CA Department of Water Resources definition of less than 80 percent of State median household income). The potential for grants in the current financial and political environment, for this particular project, would be small given the less than complete use of current water rights and permits, as well as limited residential/domestic use and conservation activities.

Summary of Total Net Benefits and Total Repayment and Operating Costs for Proposed Development to Year 2020 (Repayment at 4% interest rate)					
Benefits	**1963 (to year 2020)**[4]	**2014**	**Costs**	**1963 (to year 2020)**[5]	**2014**
Agriculture	$ 2,225,000	$17,295,765	New York Flat	$ 4,817,000	$37,266,579
Residential Farm	$ 1,880,000	$14,544,565	Fall River Diversion	$ 1,815,000	$14,041,694
Urban	None	-	Enlarged New York Flat Res.	$ 925,000	$7,156,235
Recreation	Not determined	-	-	-	-
TOTAL:	**$ 4,105,000**	**$31,840,330**	**TOTAL:**	**$ 7,557,000**	**$58,464,508**

- Environmental considerations: The proposed location for the New York Flat Reservoir is in a small, shallow valley that historically provided shelter and sustenance to local Nisenan tribal groups.[6] It now provides meadow habitat to endemic and some threatened and endangered species. The water supply running natural through New York Creek is negligible, and would not be adequate to fill the reservoir, nor to supply water demands of downstream NYWD irrigation customers. Constructing an on-stream reservoir is no longer conventional practice, and it is likely that protest from environmental perspectives would be significant. This would, in the end, add to project timeline and cost, and could potentially halt the project if the protest were significant and went to the courts.

Given the updated cost assessment and evaluation of the current environment for on-stream storage options, it is highly unlikely that the New York Flat Reservoir would be constructed under current socio-political conditions. However, in the case that the extreme drought of 2013-14, a continuation of the three-year drought between the 2012 and 2014 water years, continues, it is possible that many projects previously considered improbably become more realistic. What the evaluation of the New York Flat reservoir comes down to, though, is the lack of water rights and the sheer cost of water to fill the reservoir.

[4] Taken directly from Table 48 in the California Department of Water Resources' Bulletin 115, 1964.

[5] Adjusted 1963 to 2014 from http://www.bls.gov/data/inflation_calculator.htm, accessed January 20, 2015

[6] Ibid.

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North Yuba Water District
Water Treatment Plant Effluent –
Aluminum Compliance Feasibility Study

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July 22, 2015

North Yuba Water District
Water Treatment Plant Effluent -
Aluminum Compliance Feasibility Study

July 22, 2015

Prepared under the responsible charge of

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INTRODUCTION

Project Goals and Objectives

This feasibility study will consider the following potential modifications:

- The additional sampling results from the on-going monitoring program.
- Feasibility of achieving an aluminum limit of 200 ug/l.
- Estimated Costs, cost-benefit results, and schedule for the feasible and preferred alternatives

On July 26, 2013, the Regional Water Quality Control Board (RWQCB) adopted the District's current Waste Discharge Requirements - Order R5-2013-0108, NPDES CA0084824 (Order), which updated Order R5-2007-0078. The feasibility study will meet the requirements of the Order's Method of Compliance Report that needs to be completed and submitted within two years of the permit effective date (i.e., by July 26, 2015). The feasibility study will include a recommendation for a compliance project that results in meeting the Order's final aluminum limit of 200 ug/L (annual average).

To facilitate any needed engineering design, the feasibility study also includes preliminary design criteria and schematics for the recommended modification.

Background

The North Yuba Water District (District) provides treated and irrigation water to rural customers primarily within Yuba County with a small portion of its service area located within Butte County. The District provides treated drinking water service to a population of approximately 3000 people (approximately 800 connections) in the communities of Forbestown, Sharon Valley, Brownsville, Challenge, Rackerby, and Cummings Ranch. The District also serves raw water to approximately 100 agricultural connections.

WATER SUPPLY AND NEEDS

The District receives surface water diverted from the Feather River's South Fork and conveyed via the Forbestown Ditch. The ditch receives water from South Feather Power Project (SFPP) through the Woodleaf Turnout SF-14 diversion, which is the start of the Forbestown Ditch. Figure 1 is an overview of the Forbestown Ditch from the SF-14 diversion through the diversion to the FWTP.

Flows in this ditch provide water to the District's domestic and irrigation customers. Table 1 summarizes Forbestown Ditch's raw water supply allocation. The ditch is the sole source of raw water to the Forbestown Water Treatment Plant (FWTP), which is located about 10 miles southwest of the diversion point. The District operates the FWTP under a Drinking Water Supply Permit issued by the California State Water Resources Control Board's Division of Drinking Water (DDW).

The existing Forbestown Ditch was constructed in 1865 in native soils and in a forested area. In addition to the open nature of the ditch, an approximately three-quarter-mile segment of the ditch was constructed in a steep downhill area (cascade section) that has led to considerable down-cutting caused by channel erosion. Due to the high velocity of the water along this stretch of the ditch, down-cutting is anticipated to continue, leading to high silt loads during periods of substantial use, which occur annually.

The vegetation in the vicinity of the ditch adds to the total pollutant loading by contributing pine needles and other humic substances, and animal waste to the water. The natural soils underlying the unlined ditch allow substantial water losses over the approximately 10-mile length of the ditch.

Figure 1. Forbestown Ditch Plan View from SF-14 Diversion through FWTP Diversion.

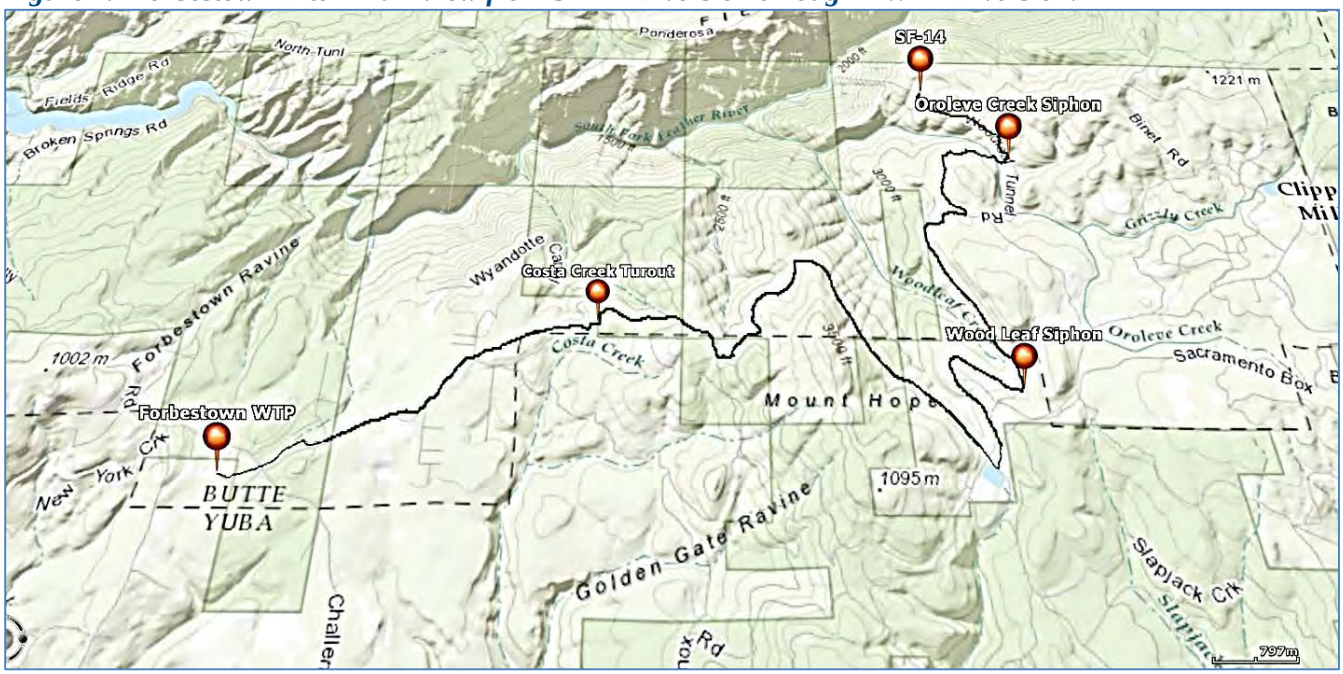


Table 1. Forbestown Ditch's Raw Water Supply Allocation.

Consumer	Raw Water Capacity
South Feather Water and Power Authority (SFWPA)	11.0 cfs (7.1 mgd)
Domestic Water Supply[1]	1.6 cfs (1.0 mgd)
Irrigation Water Supply[2]	11.4 cfs (7.4 mgd)
TOTAL	**24.0 cfs** (15.5 mgd)

1. Domestic water supply based on design daily average capacity of the FWTP.

2. Estimated raw water supply for irrigation if Forbestown Ditch has no water losses

3. mgd = million gallons per day

The domestic water distribution system includes a 500,000 gallon steel storage tank at the FWTP and approximately 33 miles of pipeline. Some of this water is used for agricultural purposes for small family farms in the area and for typical outdoor uses associated with residential use. The areas in the communities in the southern region of the District do not have a public water system, and rely on groundwater wells for potable water. When sufficient raw water supply is available, the irrigation operation is 24-hours per day and 7-days per week for six months each year (from April 15 through October 15).

FORBESTOWN WATER TREATMENT PLANT FACILITY DESCRIPTION

On-site Raw Water Storage Reservoir

Flows from the Forbestown Ditch may directly feed the FWTP treatment operation or be diverted to the on-site raw water storage reservoir. During the period from May through September (summer), when water demand is the highest, the raw water for the FWTP treatment operation comes directly from the Forbestown Ditch. During the non-peak period from September to May (fall, winter, and spring), the on-

site storage reservoir is used as the raw water source via the fine-slotted intake screen (to remove large debris and leaves) and raw water pump. The exact date in the spring and fall for the switch in the FWTP source water (from either the ditch or on-site reservoir) is dependent on domestic water demand.

As needed, the on-site reservoir is filled with flows from the Forbestown Ditch to maintain a full reservoir without overflowing to the unnamed tributary to the New York Flat Creek. Because of the Forbestown Ditch's aging infrastructure, the ditch periodically requires shut-down for routine maintenance and emergency repair. Historically, ditch repairs have lasted up to five days to complete. Following each shut-down, the ditch operation may require up to two days to reach full operation. To ensure a more reliable water supply for District's operations, emergency, and fire needs, the District currently maintains a full on-site raw water reservoir (30.9 acre-feet or 10 million gallons). At this full-capacity, the District estimates it has a 10-day raw water storage (based on one treatment train operating at 1-mgd).

As noted below, the on-site reservoir also receives overflows from the FWTP's two backwash waste settling ponds. Therefore, overflows from the on-site reservoir is a mixture of raw water (from the ditch) and FWTP backwash waste water. When needed, the District uses an algaecide suitable for potable water reservoirs and with 9% copper to control aquatic weeds in the on-site reservoir. The MSDS sheet for the algaecide is included in Appendix B – FWTP Operational Data.

Treatment Operations (Up-flow Clarifiers and Multimedia Filters)

The FWTP's design average daily flow is 2.0 mgd. The treatment facility includes two process trains where each train includes an up-flow absorption clarifier and multimedia filtration unit. The treatment capacity of each train is 1.0 mgd. The raw water is pre-chlorinated and pre-treated with an aluminum based coagulant to condition the solids immediately before the clarifier tanks, which use mixing, flocculation, and clarification (all in a single process step) to remove heavier raw water solids. Next, the multimedia filtration units use synthetic beads and mixed media (sand, anthracite, and gravel) to capture particulate and fine materials. Finally, the treated water is post-chlorinated and sent to the on-site treated water storage tank prior to distribution to domestic water customers.

The adsorption clarifier tank media is cleaned using an air scour and water flush process. This process uses vigorous mixing and scouring to separate the media and solid waste, which is then backwashed. The multimedia filters are also backwashed to clean the media. The flushing and backwashing operations are based on the pressure differential across the clarifier/filter. Table 2 summarizes the FWTP's major wastewater stream flows:

Table 2. FWTP Major Wastewater Flow Summary

Operation	Criteria
Clarifier Flushing Waste[1]	6,500 gallons/flush
Filter Backwash Waste[2]	19,800 gallons/backwash
Emergency Generator Cooling Water *(when operating)*	21,160 gpd

1. *During peak-use period, flushing 0 to 3 times per day average. During non-peak use, flushing 0 to 2 times per day average.*
2. *During peak-use period, backwashing typically 1-2 times per day but up to 3 times per day. During non-peak use, backwashing occurs every other day.*

Solids Dewatering Lagoons (Settling Ponds)

All flush and backwash waste flows, cooling water, and other minor wastewater flows are sent to one of two solids dewatering lagoons (settling ponds) located behind the treatment facility building. A common

pipe receives all waste flows and sends flows to a splitter box that controls flows to either one of the setting ponds. These ponds are designed to allow solids to settle and are dewatered by gravity underdrains and evaporation. Currently, the District alternates use of the ponds on a yearly basis, with one in use for settling and dewatering while the other in use for drying accumulated solids. The ponds are cleaned on a yearly basis. The solids removed from the active pond are dried on site and transported to a landfill for disposal.

Each pond includes an overflow pipe. When the water surface level in each ponds exceeds Elevation 2739.5 feet, the decanted overflow is sent to the on-site storage reservoir at Discharge Point 001 (EFF-001 in the District's NPDES permit and shown in Figure 2 below.). The flow from Discharge Point 001 is not directly measured. Therefore, the NPDES permit estimates the flow from the ponds to be equivalent to 0.07 mgd, the design dry weather maximum flow from the FWTP's filter backwash wastewater system.

Regulatory Requirements

NPDES WASTE DISCHARGE REQUIREMENTS FOR THE FWTP EFFLUENT

The discharge location covered by this order is where the settling ponds' overflow pipes daylight into the on-site reservoir. The Order contains final effluent limitations for aluminum (equivalent to the Secondary Drinking Water maximum contaminant level of 200 ug/L as an annual average per calendar year). District's compliance with this final effluent is not consistently achievable. Therefore, an interim effluent limitation for aluminum is included in the Order. Table 3 summarizes the Order's interim and final FWTP effluent limitations for aluminum.

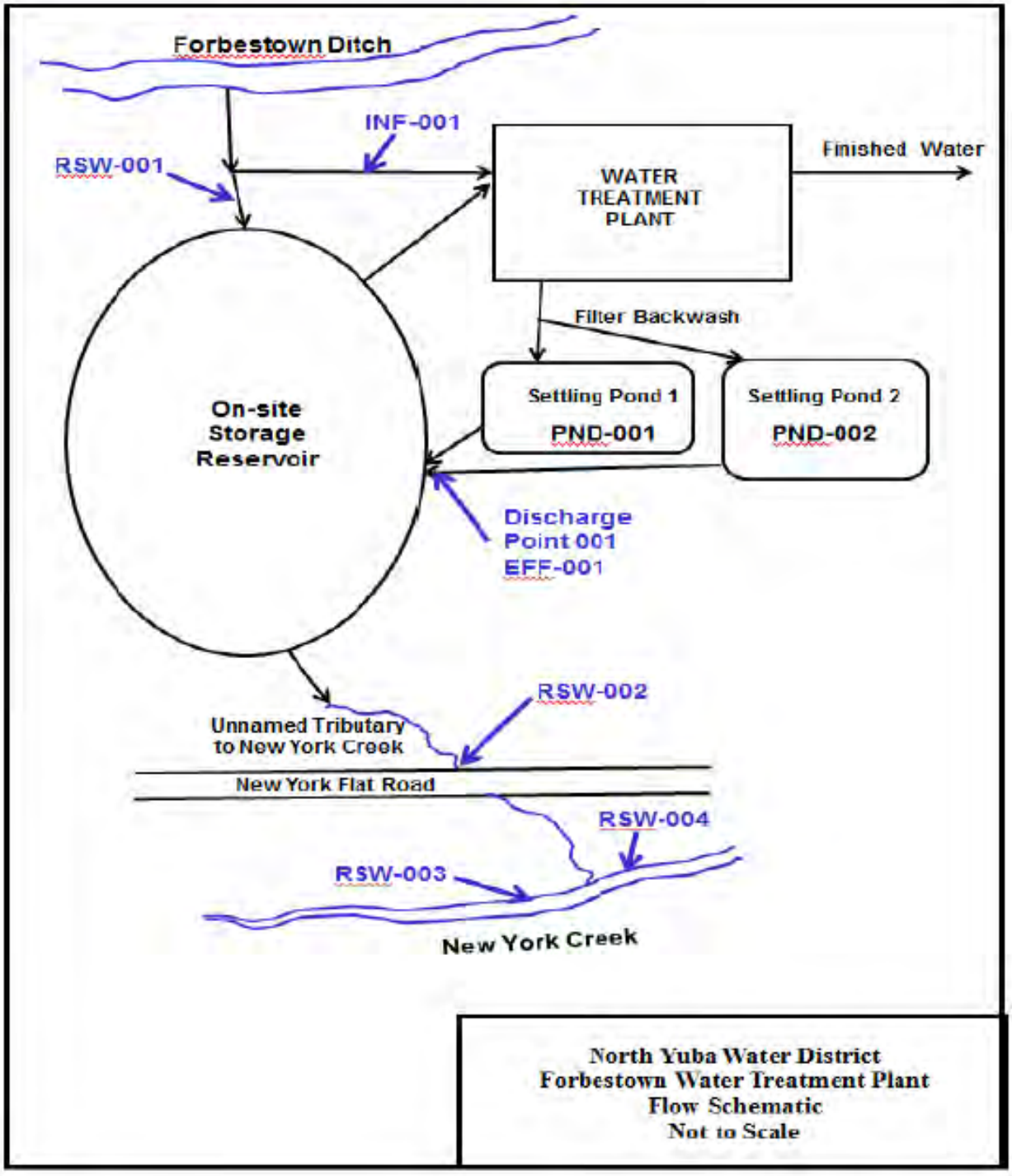
Table 3. FWTP Effluent's Interim and Final Effluent Limitations for Aluminum

Constituent	Units	Interim *(Annual Average)*	Final Limit *(Annual Average)*
Aluminum	ug/L	798	200

Under this Order, the District was required to submit a Method of Compliance and Work Plan (2014 Work Plan) within one-year of the Order's effective date (July 26, 2014). This 2014 Work Plan outlined the District's corrective action plan and implementation schedule to assure compliance with the final effluent limitations for aluminum by July 26, 2018, five years from the adoption of the Order. The 2014 Work Plan also identified two probable sources of aluminum that are affecting the compliance of the Order's permitted aluminum levels:

- Raw Water source (Forbestown Ditch)
- Aluminum based coagulant aid used in the treatment operation

Figure 2. FWTP Flow Schematic



MONITORING PLAN

Historical aluminum data are limited. As noted in the 2014 Work Plan, the District began monitoring the water discharges as required under the Order and will continue monitoring based on the requirements of the Order. Under the Order, monitoring is required when discharge occurs. Currently, monitoring consists of the following sample locations described below and shown on Figure 3.

- **RSW-001 and INF-001**: This is a sampling location that exists at the discharge of the exiting closed conduit transporting water from the Forbestown Ditch to the FWTP and on-site raw water reservoir. Since INF-001 redirects water into the FWTP near the same location as RSW-001, RSW-001 will also be used for its sample as it flows into the treatment plant and is chemically treated. The Order requires monitoring at INF-001 for electrical conductivity (once per year minimum) and hardness as CACO3 (once per year minimum)
- **PND-001 and PND-002**: These samples consist of the backwash water from the water treatment process in each respective pond.
- **EFF-001**: This sample point is located at the end of either drainage pipes directing overflows from the ponds to the raw water storage reservoir. Currently, the District uses only one basin at a time. The Order requires the District to monitor Discharge Point 001 at EFF-001 when there is discharge to the on-site reservoir from the settling ponds. Regarding the total recoverable aluminum parameter, the Order requires once a month grab sampling at EFF-001.
- **RSW-002**: This sample location exists along the unnamed tributary of New York Flat Creek after water has exited the raw water storage reservoir. After sufficient monitoring time, if the data shows that the unnamed tributary to New York Creek being a possible source of aluminum contamination, a second sample can be taken at the reservoir overflow as it enters the unnamed tributary stream.
- **RSW-003 and RSW-004**: These sample locations exist upstream and downstream of where the unnamed tributary connects with New York Creek respectively. Sampling before and after this connection allows NYWD to monitor the aluminum contamination in New York Creek resulting from the FWTP.

RECENT SAMPLING RESULTS

Since August 20, 2013, the District has conducted testing on water samples collected at:

- **EFF-001** (FWTP effluent discharge into the on-site reservoir) where samples are collected monthly.
- **RWS-001** when water is received from the Forbestown Ditch and stored at the on-site raw water storage reservoir
- **RWS-002** when water is discharged from the on-site reservoir storage site and into the unnamed tributary to New York Creek.

The District has continued to monitor and collect samples at EFF-001 each month throughout the compliance period. Samples collected were analyzed by Cramer Engineering, Inc. Total recoverable aluminum were tested using EPA 200.7 analytical methods. The EFF-001 samples were also tested for Calcium, Magnesium, Total Suspended Solids, recoverable hardness as CACO3, settleable matter, etc.

Figure 3. FWTP Site Map with Monitoring Locations

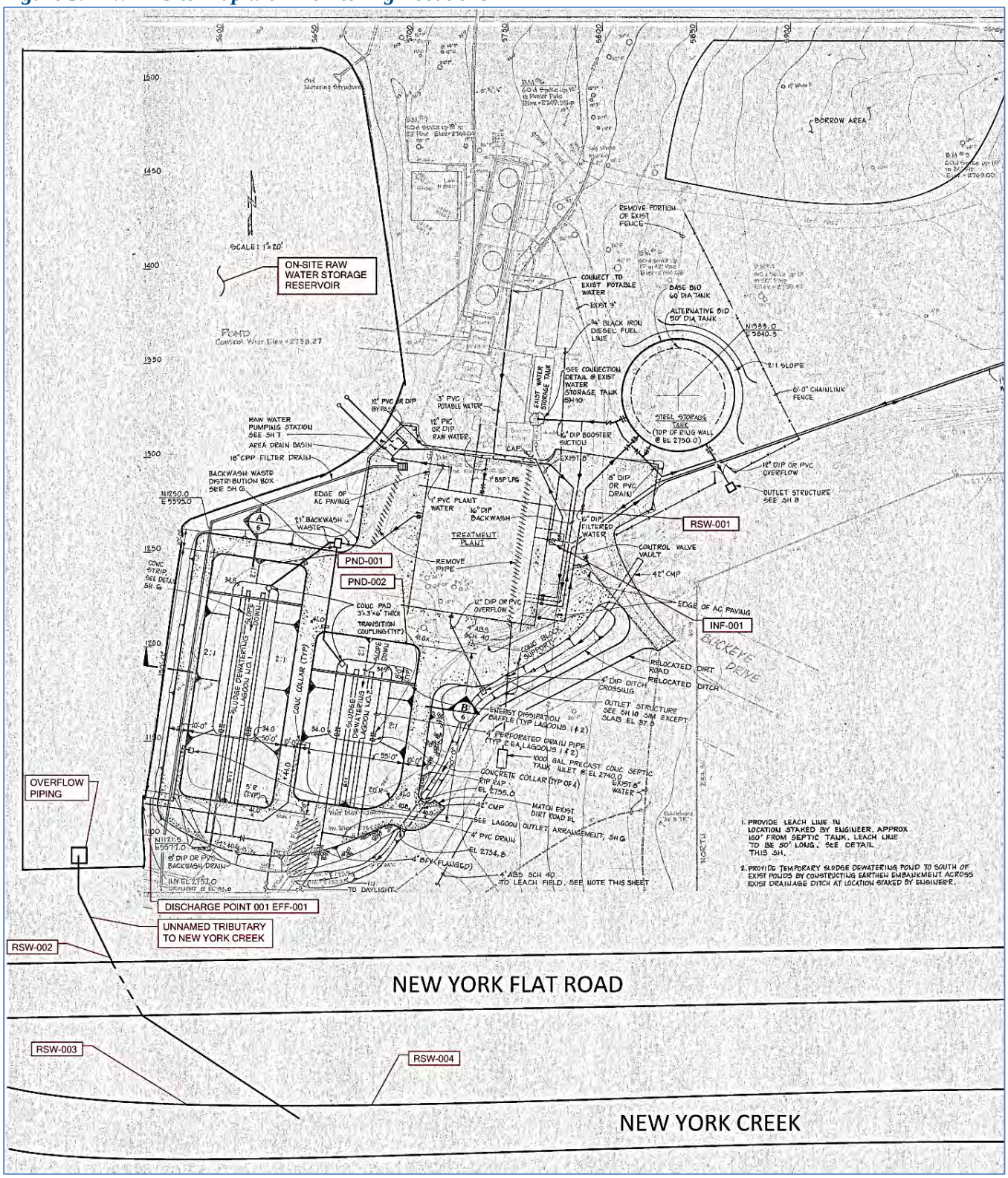


Figure 4 summarizes the total recoverable aluminum measured in the EFF-001 samples collected from August 20, 2013 through May 27, 2015. This figure also compares the sample results with respect to the Order's final and interim aluminum limits. In addition to the EFF-001 sampling, the figure shows the total recoverable aluminum amounts detected at the RSW-001 and RSW-002 locations.

As seen in Figure 4, except for a few outliers, most of the EFF-001 samples were below the interim limit for aluminum. For samples above the interim limit, the District acknowledged that the samples were unusually high as compared to the other sample results and attributed the outlying results to errors. With respect to the final limit of 200 ug/L, the EFF-001 samples had aluminum concentrations below the final limit during the early winter and late spring periods.

As also seen in Figure 4, the high EFF-001 aluminum results tended to exceed the 200 ug/L final limit when the RSW-001 samples also exceeded 200 ug/L. As noted above RSW-001 samples are only taken when water from the Forbestown Ditch is stored in the on-site reservoir. This observation supports the theory that the Forbestown Ditch is the primary source of aluminum at the FWTP facility.

Schedule for Compliance

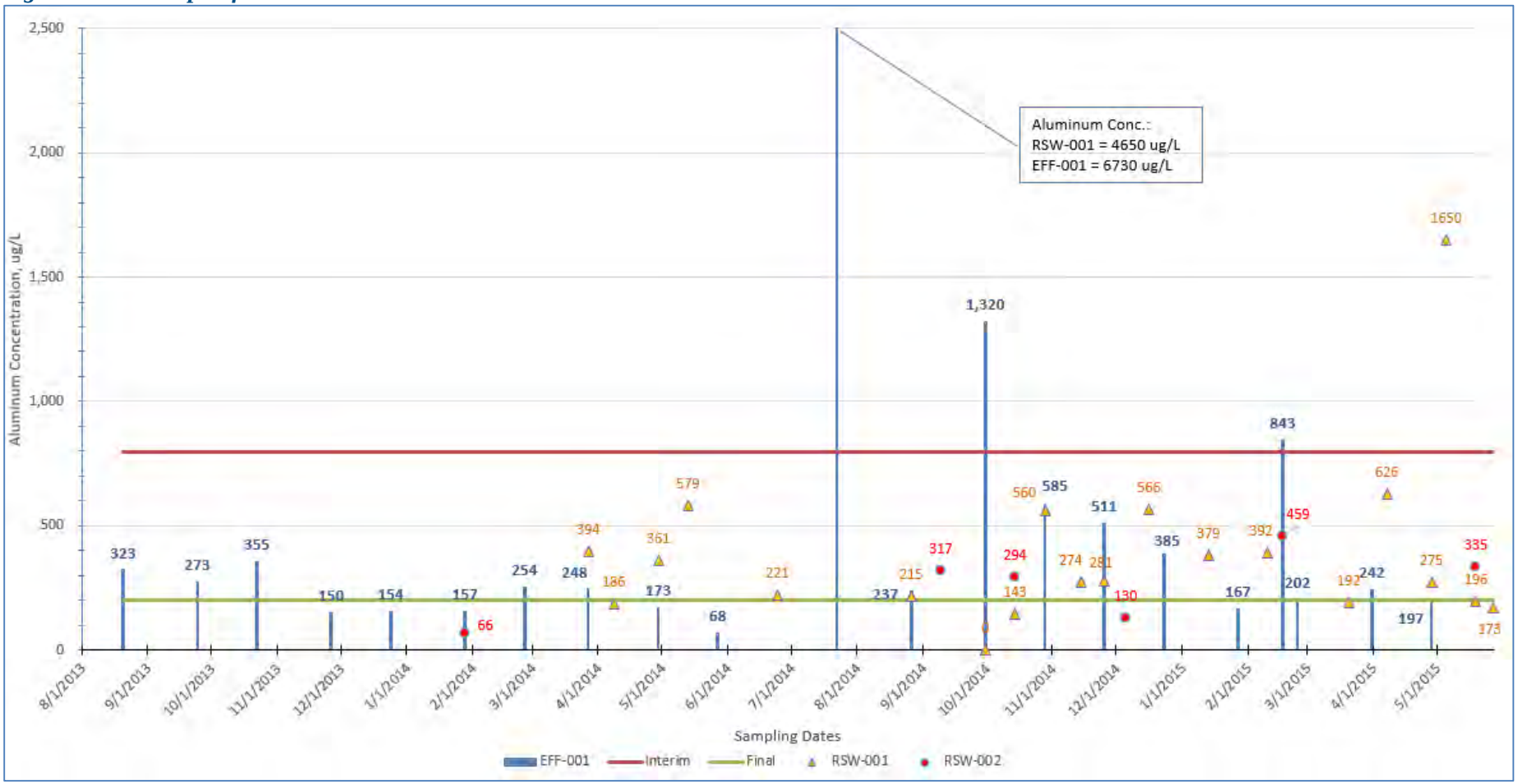
As noted in Table F-14 of the Order, any compliance project should begin within 3 years after the permit effective date (i.e., by July 26, 2016). Therefore, any design or engineering design should be completed by May 2016 to allow sufficient time for contractor bidding and mobilization (if needed).

An estimated time schedule for implementing the actions was described in the 2014 Work Plan and is present in Table 4. The proposed schedule is based on the District maintaining compliance with the Order's interim aluminum limit during the Phase I and II of the 2014 Work Plan. Progress on actions described in the 2014 Work Plan will be provided in the Method of Compliance Work Plan Progress Reports submitted to the RWQCB annually by January 31, after approval of the 2014 Work Plan. The progress reports shall detail the steps that have been implemented towards achieving compliance with the Order, including studies, construction progress, evaluation of measures implemented, and recommendations for additional measures as necessary to achieve full compliance with the final effluent limitations.

Table 4. District's FWTP Effluent Method of Compliance Schedule for Aluminum

Task	Approximate Completion Date
Implement Monitoring Program	Ongoing
Method of Compliance Work Plan Progress Report	January 31, annually
Complete Feasibility Study *(Method of Compliance Report)* **and Submit to RWQCB**	July 26, 2015
Complete Preliminary and Final Engineering Designs *(if needed)*	May 2016
Begin Compliance Project *(e.g., construction)*	July 26, 2016
Full Compliance with Final Aluminum Limit	July 26, 2018

Figure 4. Bar Graph of Aluminum Concentrations Measured at EFF-001



FEASIBILITY STUDY

Sources of Aluminum

As noted in the District' Pollution Prevention Plan, the FWTP's two sources of aluminum are the raw water source and the aluminum based coagulant aid used in the treatment operation.

RAW WATER SOURCE

The District monitors the raw water quality based on guidance from the California DDW under the requirements of the Water Supply Permit, which does not require measurement of the influent aluminum concentration. Aluminum is a naturally occurring metal and is known to be present in the raw water originating in the District's and other Sierra watersheds. Figure 5 shows the locations where recent aluminum samples were collected by the District along Forbestown Ditch. The Table 5 summarizes the total recoverable aluminum concentrations from these raw water samples.

Figure 5. Locations of Aluminum Sampling Along Forbestown Ditch

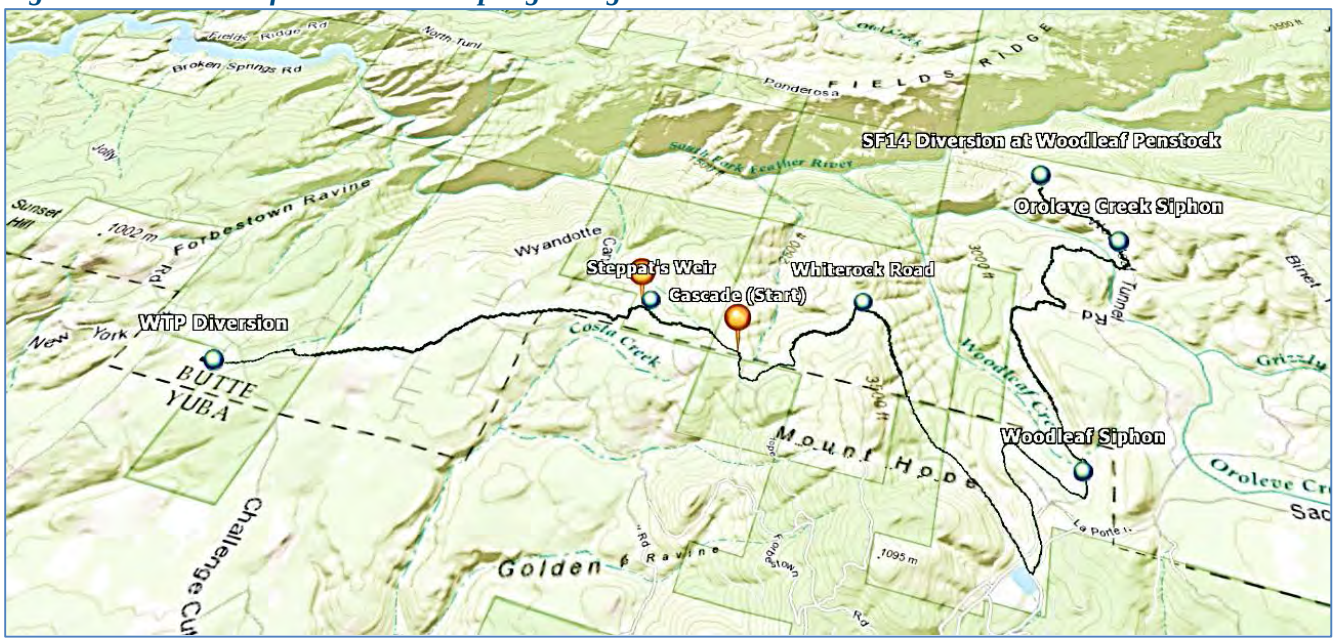


Table 5. Aluminum Concentrations from Raw Water Samples Collected along Forbestown Ditch

Sample Date	SF-14	Oroleve Junction	Woodleaf Siphon	Whiterock Road	Steppats Weir	RWS-001 at FWTP
4/8/14	111	84	71	No Sample	122	186
5/27/15	ND	57	89	123	190	173

Note: Total recoverable aluminum concentration as reported in ug/L

Recent sampling shows that the raw water aluminum concentrations are below the Order's final limit of 200 ug/L. At the Forbestown Ditch source water diversions (i.e., SF-14 and Oroleve Junction), the aluminum concentrations are significantly lower than from RWS-001 samples (collected at the FWTP, upstream of on-site reservoir).

Figure 5 also shows the Forbestown Ditch's cascade section starting point (downstream of Whiterock Road) and ending point (near Steppats Weir). In this section, the ditch is unlined and the water is significantly turbulent due to an 11-percent elevation drop over 1800-feet of ditch followed by a 2.8-percent elevation drop over 2500-feet. The May 27, 2015 samples showed a significant increase in Aluminum concentrations between the Whiterock Road and Steppats Weir sampling locations. Therefore, recent sampling supports that the unlined Forbestown Ditch are contributing significant levels of aluminum to the FWTP raw water supply.

ALUMINUM BASED COAGULANT AID

The District uses a proprietary aluminum based coagulant aid manufactured by NTU Technologies. This coagulant enhances coagulation of colloidal particles and improves settling and filtration properties. Samples of the FWTP treated water verify that the current treatment operations remove both the coagulant and naturally occurring aluminum to levels below the Drinking Water maximum contaminant levels.

2014 Work Plan Alternatives

The 2014 Work Plan included considerations of near-term and long-term modifications to the FWTP's backwash system to:

- Improve water quality of the settling pond discharge (i.e., overflows from settling ponds)
- Reduce solids carryover to section of pond near the overflow pipe (during discharge into the settling ponds)
- Collect additional data to estimate the feasibility of reducing solids and aluminum loads.
- Reduce discharge from the backwash waste settling ponds into the on-site raw water reservoir.

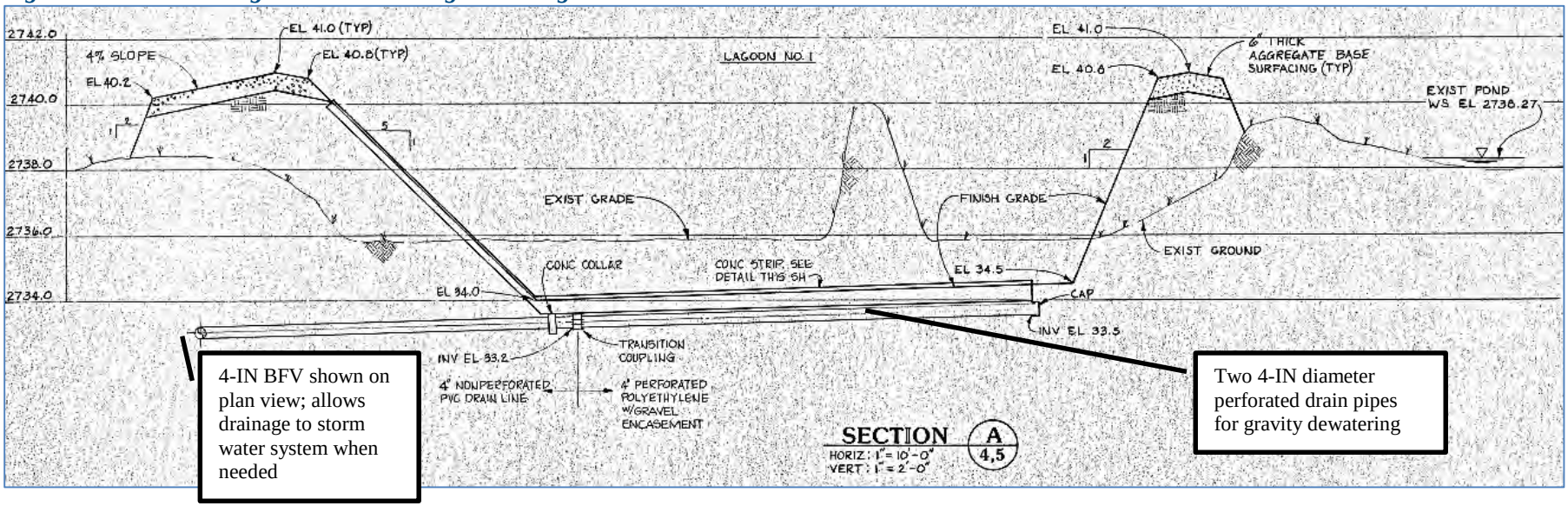
Since the District is nearly compliant with the Order's final aluminum limit, the 2014 Work Plan proposed that the feasibility study consider *both* the near-term and long-term modifications to achieve the final aluminum limits. Recent monitoring results continue to show that the District is in compliance with the interim aluminum limit. Therefore, the near-term modifications may be sufficient for full compliance with the Order's requirements.

Current Operation

The feasibility study evaluated 2013 and 2014 FWTP operational data provided by the District to estimate the solids loading contributed by the raw water and coagulant sources. Because of the historical drought conditions in California, 2014 was the first year that the District restricted Forbestown Ditch flows to SFPWA and FWTP only. Therefore, 2013 represented the last year with typical operation of the Forbestown Ditch and FWTP. The feasibility study's evaluations focused on using FWTP operational data from 2013.

As noted previously, the District alternates between the two settling pond on a yearly cycle. Based on conversations with staff at the FWTP, the ponds are able to produce 20% dry solids cake within one week of drying. The FWTP's 1986 Water Treatment Plant Improvements Project drawings showed that each settling pond was designed with two 4-inch diameter perforated polyethylene drain pipes running along the bottom of each pond to facilitate gravity drainage. The cross sectional view of the settling ponds' design are shown in Figure 6. Table 6 summarizes the design criteria for each settling pond.

Figure 6. FWTP Settling Ponds 1986 Design Drawings – Cross Sectional Views



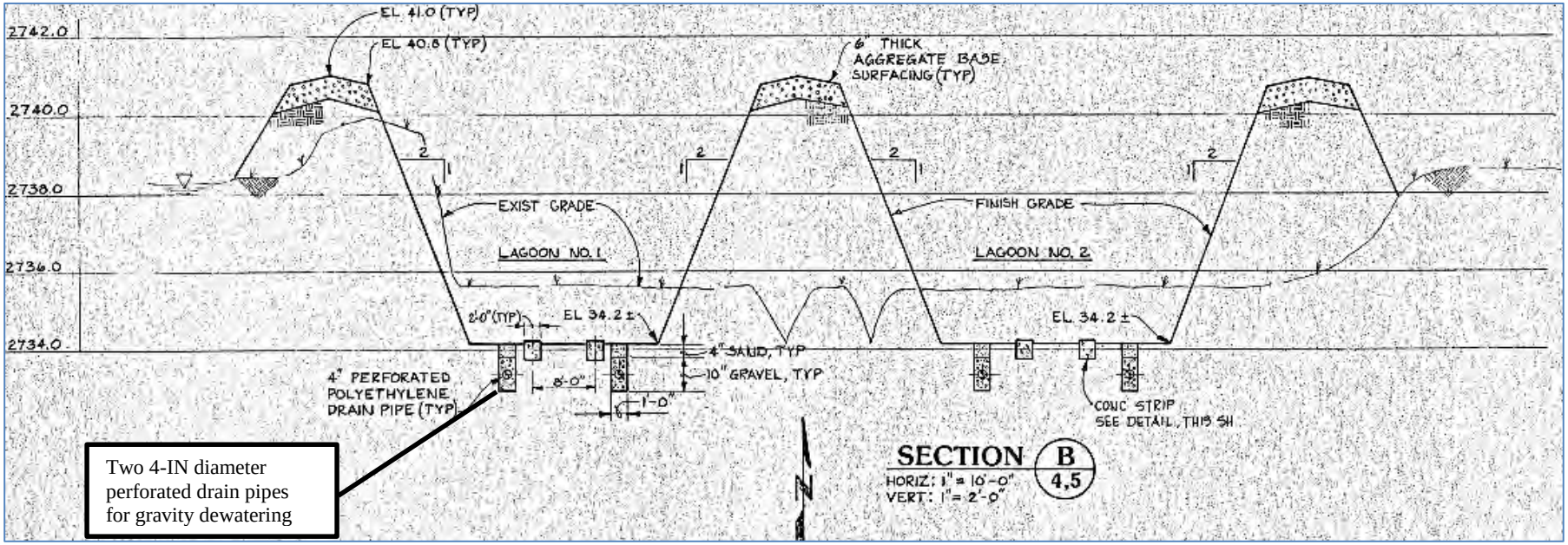


Table 6. FWTP Settling Ponds Design Criteria

Facility	Effective Width	Effective Length	Effective Solids Loading Area	Effective Depth	Estimated Hydraulic Volume
Settling Pond 1	50 feet	130 feet	6,500 square feet	6 feet	197,200 gallons
Settling Pond 2	55 feet	90 feet	4,950 square feet	6 feet	142,900 gallons
		TOTAL	**11,450** square feet		**340,100 gallons**

Based on FWTP's 1986 WTP Improvements Project drawings
Effective Width – designed width for solids loading
Effective Length – designed length for solids loading
Effective Depth – depth between designed bottom of pond (Elevation 2734.2) and invert of overflow pipe (Elev. 27

SOLIDS PRODUCTION EVALUATION (FROM BACKWASH OPERATION)

Table 7 summarizes the 2013 raw water and coagulant operational data and also estimates the total solids produced by the treatment operation. The total solids produced estimates the total solids sent to the settling ponds for drying and eventual disposal at the landfill. As shown in Table 7, the raw water source is the greater contributor of solids at the FWTP; the coagulant aid contributes less than 10 percent of the yearly total solids produced.

Table 7. 2013 Operational Data and Estimated Total Solids Produced (based on dry solids basis)

2013	RW to Plant (Mgal)	RW Monthly Avg Turbidity (NTU)	Raw Water Solids (lbs d.s.)	Coagulant Used (lbs. Aluminum Poly Blend)	Coagulant Solids * (lbs d.s.)	Total Solids Produced (lbs d.s.)
Jan	9.89	3	322	138.67	69	391
Feb	8.613	1.4	131	88.85	44	175
March	8.117	2.8	246	96.93	48	295
April	9.943	3.2	345	160.21	80	425
May	14.895	6.3	1017	129.24	65	1082
June	18.258	14.9	2950	169.63	85	3034
July	23.917	14.1	3656	204.65	102	3759
Aug	20.628	11.6	2594	169.63	85	2679
Sept	15.8371	8.3	1425	123.86	62	1487
Oct	12.156	3.7	488	140.01	70	558
Nov	9.176	1.7	169	138.67	69	238
Dec	10.89	1.9	224	146.74	73	298
Year Total *(rounded)*			**13,600**		**900**	**14,400**
Annual Average Day *(lbs d.s./day)*			**38**		**3**	**40**

** Based on NTU 926 percent solids (by weight): 0.5 lbs dry solids (d.s.) per 1-lb of NTU 926 (Alum. Poly Blend)*
Raw Water Dry Solids = Flow (MGal) x Turbidity (NTU) x 1.3 x 8.34 (1.3 is NTU conversion to mg/L dry solids)
Coagulant Dry Solids = Coagulant Use (lb/month) x 0.5 lbs dry solids per lb of coagulant
Total Solids Produced = Raw Water Solids + Coagulant Solids

Typical solids loading rate (for gravity dewatering lagoons) range from 8.2 to 16.4 pounds dry solids per square feet (lbs. d.s./SF) of lagoon area, where 8.2 lbs. d.s./SF is used for wet regions. As noted in Table 7, the FWTP produced approximately14,400 lbs. d.s. in 2013. Table 8 summarizes the estimated pond area needed to effectively achieve gravity dewatering for the typical range of solids loading rate. Based on this evaluation, the FWTP's settling ponds have more than sufficient area to achieve gravity dewatering at its current annual solids production rate.

Table 8. Estimated Pond Area Needed for Gravity Dewatering (based on 2013 Total Solids Produced)

Annual Total Solids Produced	Solids Loading Rate	Effective Area Needed for Drying *(rounded)*	Percent of Settling Pond 1 Effective Area	Percent of Settling Pond 2 Effective Area
14,400 lbs. d.s.	**8.2 lbs. d.s./SF**	1760 SF	27%	35%
14,400 lbs. d.s.	**16.4 lbs. d.s./SF**	880 SF	14%	18%

BACKWASH WASTE VOLUME EVALUATION

Table 9 summarizes the 2013 backwash waste volumes measured at the FWTP and represents the hydraulic flows sent to the settling ponds for gravity drain and evaporation. With respect to the estimated hydraulic volumes available in each settling pond (see Table 6), the monthly backwash volumes are significantly high. Table 10 summarizes the backwash operation data for the entire month of July in 2013, which was the peak month in backwash waste volume generated.

Especially during the summer months (May through September), the monthly backwash volumes are more than double the **total** estimated hydraulic volume in the settling ponds (340,100 gallons). Any plugging of the perforated gravity drain piping (under each pond) may result in slower drainage and overflows to the on-site reservoir. As seen in Figure 7 and Figure 8 (photos of both of the settling ponds), the backwash waste volumes have caused the ponds to rise above the crown of the overflow piping.

Table 9. 2013 FWTP Backwash Waste Volume (sent to settling ponds)

Month	BW Total (Mgal)	Month BW (gal/month)	BW Avg Day (Mgal)	BW Avg Day (gal/day)
Jan	0.505292	505,292	0.016300	16,300
Feb	0.360880	360,880	0.012889	12,889
March	0.314508	314,508	0.010145	10,145
April	0.399556	399,556	0.013319	13,319
May	0.655300	655,300	0.021139	21,139
June	0.707868	707,868	0.023596	23,596
July	0.930500	930,500	0.033017	33,017
Aug	0.805308	805,308	0.025978	25,978
Sept	0.674788	674,788	0.022493	22,493
Oct	0.504692	504,692	0.016280	16,280
Nov	0.413148	413,148	0.013772	13,772
Dec	0.465416	465,416	0.015013	15,013
2013 Year	6.231964	6,231,964		
Annual Average Day	0.017311		0.018876	18,876

Table 10. FTWP Backwash Operation Data for July 2013 (Peak Month)

Date	Flushes #/day	Backwashes #/day	Backwash Waste (gal/day)	Date	Flushes #/day	Backwashes #/day	Backwash Waste (gal/day)
07/01/13	1	1	26,284	**07/17/13**	2	1	32,780
07/02/13	2	1	32,780	**07/18/13**	2	1	32,780
07/03/13	2	1	32,780	**07/19/13**	2	0	12,992
07/04/13	1	1	26,284	**07/20/13**	2	1	32,780
07/05/13	2	1	32,780	**07/21/13**	3	1	39,276
07/06/13	2	0	12,992	**07/22/13**	2	1	32,780
07/07/13	2	1	32,780	**07/23/13**	1	1	26,284
07/08/13	2	1	32,780	**07/24/13**	1	1	26,284
07/09/13	2	1	32,780	**07/25/13**	1	1	26,284
07/10/13	2	1	32,780	**07/26/13**	2	0	12,992
07/11/13	2	1	32,780	**07/27/13**	2	1	32,780
07/12/13	2	0	12,992	**07/28/13**	2	1	32,780
07/13/13	2	1	32,780	**07/29/13**	3	1	39,276
07/14/13	2	1	32,780	**07/30/13**	2	1	32,780
07/15/13	3	1	39,276	**07/31/13**	2	1	32,780
07/16/13	3	1	39,276	**Monthly Total**			**930,532**

Figure 7. Photo of FWTP Settling Pond No. 1 Overflow Pipe

Figure 8. Photo of FWTP Settling Pond No. 2 Overflow Pipe

Operational Near-Term Alternatives

The following is a list of modifications from the Work Plan that may be implemented in the next 2 years:

- Alternative 1 - Install Surface Boom at Discharge Pipe
- Alternative 2 - Install Decant Structure
- Alternative 3 - Remove Solids More Frequently
- Alternative 4 - Operate Backwash Ponds Simultaneously (Operate Ponds In Parallel)
- Alternative 5 - Dual Use of Backwash Settling Ponds (Operate Ponds In Series)

ALTERNATIVE 1 - INSTALL SURFACE BOOM AT DISCHARGE PIPE:

The discharge of backwash waste water into the settling ponds allows solids to become re-suspended and mixed within the pond. The proposed modification includes installation of a fixed wooden boom in front of the overflow piping. The boom will be approximately 1.5 feet wide and 2.5 feet from the embankment. The Boom will be secured by four steel legs. The goals of this modification would be to:

- Reduce the amount of solids re-suspended and carried near the pond's discharge pipe
- Minimize any mixing caused by the backwash inflow into the ponds

ALTERNATIVE 2 - INSTALL DECANT STRUCTURE

The amount of time the backwash waste water has to settle is crucial in the sedimentation process. Currently, the existing pond's settling time is completely controlled by the water elevation in the pond. The proposed modification includes installation of the following:

- Floating decant to allow for increased discharge and to decant the supernatant while the existing perforated drain pipes also gravity dewater the ponds.
- This alternative will allow for highest backwash waste volumes while minimizing overflows to the on-site reservoir.
- Electrical power supply and SCADA control tied to the FWTP backwash sequence.

ALTERNATIVE 3 - REMOVE SOLIDS MORE FREQUENTLY

Settled solids are currently removed from each pond annually. It may be possible that the solids level in the ponds is too high at times, and solids are washed out through the overflow pipe. More frequent removal of solids may reduce the amount of solids that are washed out of the ponds and into the on-site reservoir. To ensure the ponds are performing as designed, the designed pond inverts should be maintained.

Solids in the settling ponds have been shown to dry within one week during the summer periods. The solids may be removed after achieving a desired dryness level (e.g., 25 percent solids concentration) and stored on-site to achieve higher dryness concentration prior to final disposal. To remove the solids in a single pond, that pond may be taken out of service (e.g., for approximately a week) for cleaning, and then returned to service. Next, the other pond is allowed to dry and cleaned. This solution allows both ponds to be taken advantage of on a year-round basis.

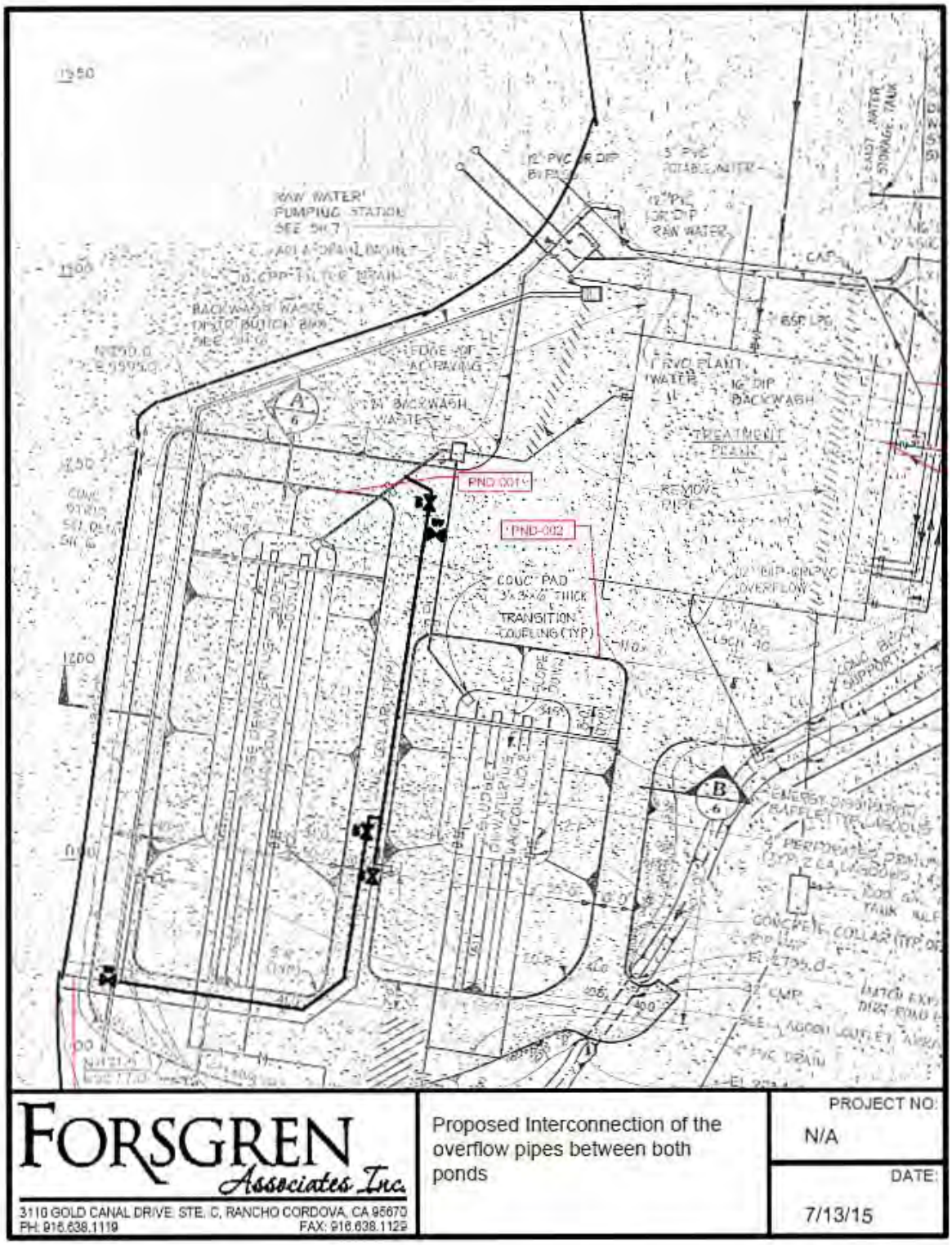
ALTERNATIVE 4 - OPERATE BACKWASH PONDS SIMULTANEOUSLY (OPERATE PONDS IN PARALLEL)

The two settling ponds are currently operated with only one pond active at a time. Sending the backwash waste flow to both ponds at the same time will reduce water depths in each settling pond between backwash cycles, and therefore, reduce the potential for overflows from the ponds to the on-site reservoir. Operating the ponds in parallel will also increase the gravity dewatering potential since all four perforated pipes (two under each pond) will increase the dewatering flow rate and reduce the dewatering time between backwash cycles.

With a greater effective area for the same solids loading, this alternative will also reduce the time to settle solids, and gravity drain the ponds. To ensure the ponds are performing as designed, the designed pond inverts should also be maintained. Solids removal operations should maintain the design depth of 6-feet throughout the length of the pond.

This operational change will be most beneficial during the summer months, when the clarifier and filters are flushed and backwashed more frequently, which result in higher backwash waste volumes to the settling ponds. The settled solids may be removed during lower demand periods and/or when less solids are anticipated in the raw water. To remove the solids from the ponds, a single pond may be taken out of service (e.g., for approximately a week) for cleaning, and then returned to service. Next, the other pond is allowed to dry and cleaned. This solution allows both ponds to be taken advantage of on a year-round basis. If the settled solids require additional drying to achieve the percent solids needed for disposal, the solids maybe stored at a laydown area on the FWTP site.

Figure 9. Proposed Interconnection of Overflow Pipes between Both Settling Ponds



This operational change may be achieved by removing the stop plates in the distribution box upstream of the settling ponds. No other piping modifications are needed to operate the ponds in parallel. The stop plates will be inserted when the pond needs to be taken out-of-service to remove settled solids. To

increase compliance with the Order's final aluminum limit, this alternative includes interconnecting the overflow pipes as shown in Figure 9. Flows entering the pond's overflow pipe will be piped to the inlet pipe of the other pond. Since the invert of each pond's existing overflow and inlet pipes are installed at approximately the same elevation (Elev. 2739.5 feet), the interconnecting pipes will not have sufficient slope to send the flow to the other pond. Instead, the rising water surface level in the pond (above invert of the overflow pipe) will result in flows to the other pond. This evaluation recommends that the interconnecting pipe match the diameter of the existing overflow pipes (8-IN diameter PVC). Butterfly valves (BFV) are proposed to isolate and control where overflows are sent. A total of five 8-IN BFV are recommended to provide the following overflow arrangements:

- When Pond No. 1 (PND-001) is operating as the lead pond, overflows from Pond No. 1 are directed to inlet of Pond No. 2 (PND-002).
- When Pond No. 2 is the lead pond, overflows from Pond No. 2 are directed to inlet of Pond. No. 1.
- When both ponds are operating in parallel, overflows from both ponds are directed to the on-site reservoir. The FWTWP operators should closely monitor water surface levels in both ponds during the summer months when more frequent flushing and backwash cycles are needed. Closely monitoring the ponds will minimize overflows to the on-site reservoir.

ALTERNATIVE 5 - DUAL USE OF BACKWASH SETTLING PONDS *(OPERATE PONDS IN SERIES)*:

This option allows backwash waste to settle in the first pond and then overflow into the second pond for additional settling time. This alternative is especially effective if longer settling times are needed because of lighter solids. Similar piping changes as proposed for Alternative 4 (as shown in Figure 9) will be required to accomplish this alternative.

For this operational change, both ponds will continue to experience gravity dewatering through their underdrains. Since each pond does not have sufficient hydraulic volume to accommodate more than a few days of backwash waste flows (especially during the summer months), the proposed overflow piping shown in Figure 9 is recommended.

Similar to Alternative 4, operating the pond in series will require periodically removing one pond from service so that further drying may be achieved and dry solids removed.

Long-Term Modifications:

The following is a list of modifications from the 2014 Work Plan that require more engineering considerations and potentially construction of improvements.

- Alternative 6 - Evaluate Alternative Primary Coagulant Chemicals.
- Alternative 7 - Removal of Backwash Effluent at EFF-001
- Alternative 8 - Source Analysis.

In addition to the long-term modifications included in the 2014 Work Plan, the District is also considering the conversion of the Forbestown Ditch from a natural ditch to a closed pipeline system. Therefore the following alternative is also recommended for evaluation:

- Alternative 9 – Convert Forbestown Ditch to Closed Pipeline System

ALTERNATIVE 6 - PROCESS MODIFICATIONS – EVALUATE ALTERNATIVE PRIMARY COAGULANT CHEMICALS

Alternative 6 involves replacing the current primary coagulant with a chemical that is not aluminum based. The FWTP is currently using an aluminum/polymer blended product – No. 926 from NTU Technologies as the coagulant aid in the treatment process. The MSDS sheet for this chemical is included in Appendix B**.** The approximate dose rate is 1.5 mg/L, based on average monthly chemical usage and raw water flow. If a potential replacement chemical were considered, it would need to be iron-based (such as ferric sulfate or ferric chloride).

This alternative is not recommended for further consideration at this time for the following reasons.

- **Current Coagulant is Appropriate**: Aluminum/polymer blends are used for many surface water treatment plants in northern California, generally because they have lower dose rates (compared to aluminum sulfate), provide good water treatment in meeting drinking water standards, and have low sludge production.
- **Dose Rate of Coagulant is Low**: The average dose rate of 1.5 mg/L is very low, and is therefore likely not contributing to the high aluminum concentrations in the effluent. Calculation of an aluminum mass balance through the system would allow this to be verified. The District currently collects raw water and effluent water samples and monitor for aluminum concentrations. To complete the mass balance, the finished water will need to be sampled for aluminum and the sludge removed from the settling ponds will be need tracked (in pounds per month) and the aluminum sampled in the sludge.

If this alternative were to be pursued further, the next step would be to perform jar testing. Jar testing will analyze the effectiveness of the chemical and determine the optimum dose rates, and will allow the Owner to review the effectiveness of sludge settling and removal. Additional raw water testing would also need to be performed as part of the analysis (iron, manganese, TOC, etc.). Candidate chemicals should be evaluated to determine the following:

- Feasibility of providing proper treatment of the water and removals of contaminants
- Expected nature and quantity of sludge production
- Annual operating cost associated with each chemical
- Mechanical upgrades needed to change to an alternate chemical. A financial analysis can then be performed.

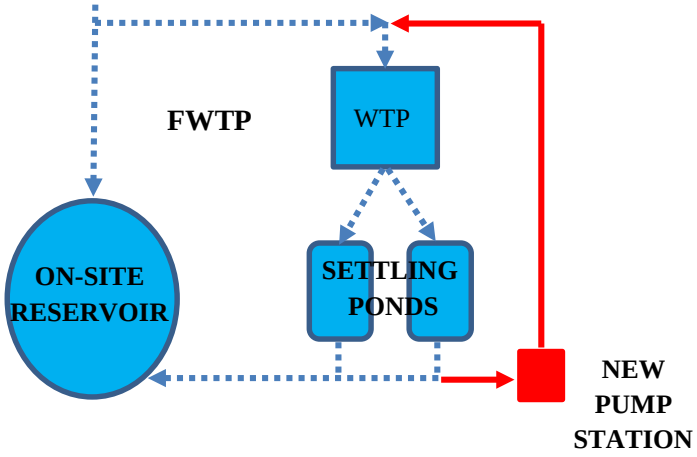
ALTERNATIVE 7 - REMOVAL OF BACKWASH EFFLUENT AT EFF-001

With this alternative, a backwash water recovery system would be constructed in order to eliminate discharge of backwash waste to the on-site reservoir altogether. The decant water from the backwash operation is recycled for retreatment through the treatment operation instead of discharged to the on-site reservoir. Per the Filter Backwash Recycle Rule, the recycle rate can be up to 10% of the raw water flow into the water treatment plant. Table 11 and Figure 10 summarizes the proposed design considerations and schematic for this alternative. Backwash waste flows do not currently exceed the 10% limit, so this option appears feasible.

Table 11. Alternative 7 - Proposed Design Criteria

Design Considerations	Units	Recommended Criteria
Design Flow of WTP	MGD	2.0 (1390 gpm)
Maximum Return		10%
Maximum Return Flow	MGD	0.2
Proposed Pump Station Pump Flow Capacity	GPM	139 (10% of FWTP Design Flow)

Figure 10. Alternative 7 - Proposed Process Schematic.



The scope of this upgrade includes the following elements.

- **Decant System for BW Ponds (per Alternative 2)**: An automatic decanting system will be provided for the settling ponds, which will consist of an automatic weir or telescoping valve with baffle. The operation of the system will be different than in Alternative 2, since the ponds can only decant when the treatment facilities are in operation with Alternative 7. The level control device will be sized and level settings determined in order to allow a flow out of the ponds equal to the return pumping rate of the pumps. Level sensing equipment will be added to the ponds.
- **BW Return Pumping System**: The return pumping system will include a wetwell, pumps (submersible centrifugal or self-priming centrifugal pumps), interconnecting piping, piping modifications in the WTP to accept the backwash decant return flow, and new electrical and controls. The pumps will only run when the WTP is operating.
- **New Controls/VFDs for Raw Water Pumps**: Upgrades may be required for the raw water flow control and pumping systems in order to reduce the raw water flow to accommodate the additional recycle flow being processed by the WTP.

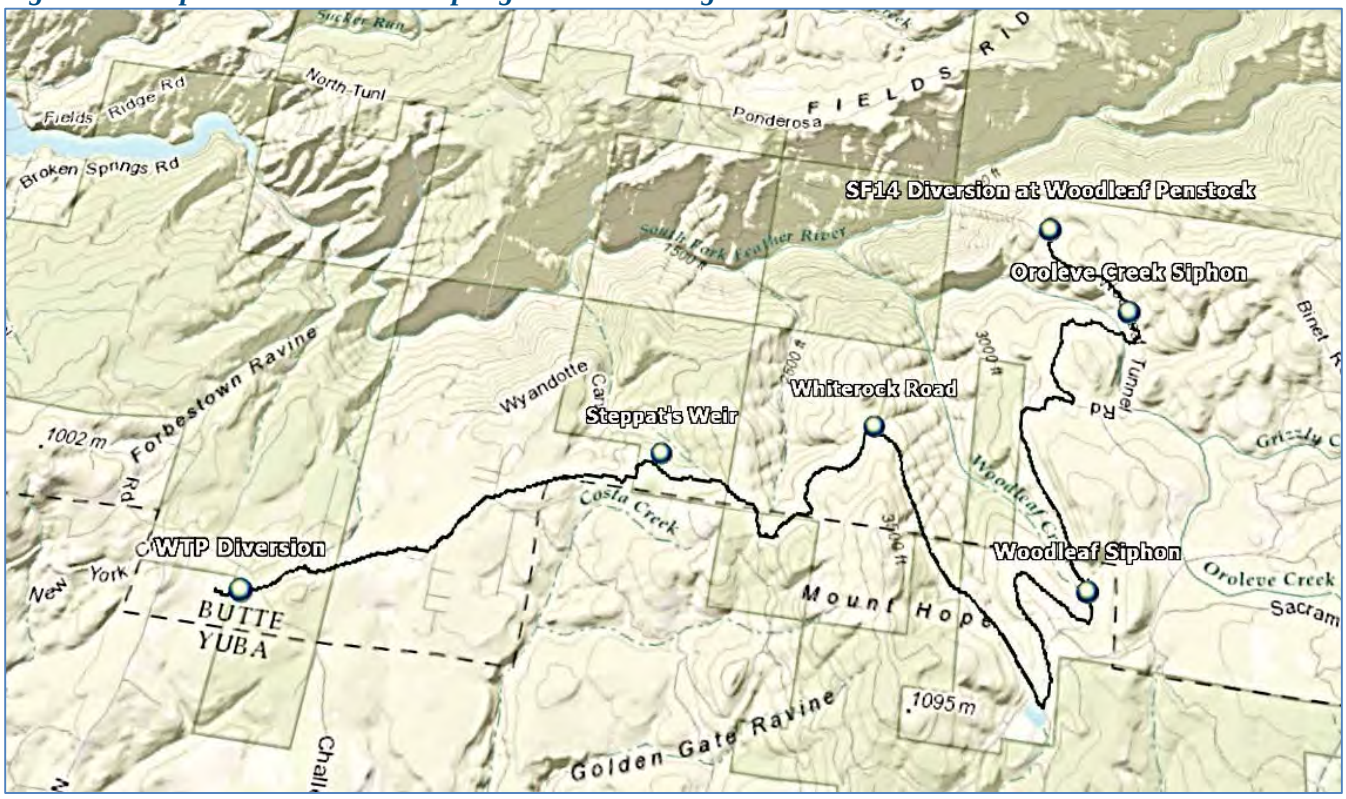
ALTERNATIVE 8 - SOURCE ANALYSIS

The ultimate goal of this alternative is to determine the primary source(s) of the aluminum in the raw water, which may include the primary source of water in the canal (Lost Creek Reservoir), secondary sources that enter the canal (Oroleve Creek), and the canal embankment material itself.

The following locations are proposed for continued long-term sampling. Figure 11 shows the location of each proposed site with respect to the Forbestown Ditch alignment.

- SF14 Diversion at Woodleaf Penstock
- Oroleve Creek Siphon
- Woodleaf Siphon
- Whiterock Road
- Steppat's Weir
- Diversion to FWTP or RWS-001

Figure 11. Proposed Raw Water Sampling Locations along Forbestown Ditch



To acquire helpful information for long-term planning, each monthly sample collected should be tested and recovered for:

- Total recoverable aluminum (ug/L)
- Turbidity (NTU and/or Total Suspended Solids)
- Ditch flow rate and time when samples are taken.

A minimum of three complete years of sampling and monitoring is recommended to develop a sufficient database (under various operating conditions) for future evaluations. If the data consistently shows increasing aluminum concentrations along the Forbestown Ditch, then lining the ditch or replacing the ditch with piping may be cost-effective viable solutions.

ALTERNATIVE 9 - CONVERT FORBESTOWN DITCH TO CLOSED PIPELINE SYSTEM

The Forbestown Ditch's improvements will minimize the aluminum concentrations in the FWTP's raw water source, which is suspected to be the biggest contributor of aluminum in the FWTP's effluent. To overcome the high water losses the District is currently experiencing along the Forbestown Ditch, the District evaluated several alternatives to convert the earthen-lined ditch to a hard-pipe gravity system. This evaluation was discussed in detail in the "Preliminary Engineering Evaluations for Raw Water Conveyance Systems", January 30, 2015, prepared by Forsgren Associates for the District.

Alternative 9 would be a follow up project to the sampling and analysis of Alternative 8 and builds upon the recommendation of Option 1B in the Preliminary Engineering Report's recommendations for the Forbestown Ditch. Various piping alternatives were discussed and presented in the report. The report's recommendations for Option 1B included:

- Base design on installation of 36-inch diameter N-12 HDPE ADS piping along the entire existing alignment of the Ditch with the exception of the cascade section. Provide bedding and backing as recommended by the piping manufacture to maintain pipe integrity. The recommended pipe diameter will provide the raw water supply capacity shown in Table 1.
- Concrete catch basins every 1000-feet, approximately, to protect the pipe from vacuum conditions and to provide access for monitoring and cleaning of the pipe.
- In the cascade section of the ditch, evaluate the following options further:
    - Leave section of ditch as open-channel (either lined or unlined). Install concrete catch basins at the upstream (to allow water to flow into the open-channel section) and downstream sections of the cascade (to recapture the flows into the pipe).
    - Transition piping from N-12 HDPW ADS piping to pressured piping (e.g., DIP) to maintain an enclosed system. Install concrete catch basins at the top and bottom of the cascade section to allow for air intake and exhaust and to minimize vacuum conditions. Evaluate whether an AWWA HDPE pipe may handle the pipe pressures possible at the cascade section of the Ditch.

Cost and Benefit Analysis

The following alternatives are commended for further consideration based on discussions with District staff. These alternatives will minimize changes to the current FWTP treatment operations while achieving compliance to the District's final aluminum limit.

- Operational Near-Term Alternatives:
    - Alternative 4 – Operate Backwash Ponds Simultaneously (Operate Ponds In Parallel)
    - Alternative 5 – Dual Use of Backwash Settling Ponds (Operate Ponds In Series)
- Long-Term Alternatives:
    - Alternative 8 – Source Analysis
    - Alternative 9 – Convert Forbestown Ditch to a Closed Pipeline System

OPERATIONAL NEAR-TERM ALTERNATIVES

Alternative 4 – Operate Backwash Ponds Simultaneously (Operate Ponds in Parallel)

For this operational change, no other piping modifications are needed to operate the ponds in parallel. The existing stop plates may be easily removed from the flow distribution box to send backwash waste flows to both settling ponds.

As noted previously, the pond will need to be periodically removed from service so that further drying may be achieved and settled dry solids removed. Some capital improvements are needed to the pond's overflow pipes (as shown in Figure 9) to allow overflows from the service pond to enter the other pond (out-of-service).

On-going O&M activities related to the settling ponds operation include:

- Monitoring water surface levels in both settling ponds especially during summer months when higher frequencies of flushing and backwashing are necessary.
- Maintaining design inverts (bottom of pond at Elev. 2734.2 feet approximately to ensure ponds perform as designed.
- Removing solids from each settling ponds on more frequent bases than once per year. This task will allow the settling ponds to better accommodate higher backwash waste flow without overflowing decant to the on-site reservoirs

Table 12 summarizes the anticipated capital and O&M costs associated with this alternative

Table 12. Alternative 4 (Operate Ponds in Parallel) Estimated Capital and O&M Costs

Cost Item	Quantity	Units	Unit Cost	Estimated Cost
CAPITAL COSTS				
Mobilization	1	LS	$3,000	$3.000
Installation	1	LS	$2,000	$2.000
8-IN PVC Pipe	170	LF	$100	$17,000
8-IN BFVs	5	EA	$1,000	$5,000
			Construction Subtotal	**$27,000**
			Contingency *(40% of construction)*	$10,800
			SUBTOTAL *(construction + contingency)*	$37,800
			Engineering, Admin/Legal *(20% of subtotal)*	$9,500
			TOTAL ESTIMATED CAPITAL COST	**$47,300**
ANNUAL O&M - ADDITIONAL OPERATING COSTS				
Settling Ponds Operation	8	Labor hrs /month	$100/hr	**$9,600**

Alternative 5 – Dual Use of Backwash Settling Ponds (Operate Ponds in Series)

Alternatives 4 and 5 will have similar capital improvements needed (as shown in Figure 9) to allow overflows from one pond to enter the other pond (operating in series).

For Alternative 5, on-going O&M activities related to the settling ponds operation include:

- More frequent monitoring of water surface levels in both settling ponds especially during summer months when higher frequencies of flushing and backwashing are necessary. With this alternative, the lead pond (first pond receiving backwash waste flows) will be continuously full and overflows will be routed to the lag pond.
- Maintaining design inverts (bottom of pond at Elev. 2734.2 feet approximately to ensure ponds perform as designed.

- With this alternative, the lead pond is anticipated to have more settled solids and fill sooner since the solids will have more detention time in the lead pond. .Therefore, the two ponds will need more frequent lead-lag changes to allow removal of settled solids from the lead pond. The increase in O&M time is difficult to estimate and O&M costs will need to be refined based on actual operating data.

Table 13 summarizes the anticipated capital and O&M costs associated with this alternative

Table 13. Alternative 5 (Operate Ponds in Series) Estimated Capital and O&M Costs

Cost Item	Quantity	Units	Unit Cost	Estimated Cost
CAPITAL COSTS				
Mobilization	1	LS	$3,000	$3.000
Installation	1	LS	$2,000	$2.000
8-IN PVC Pipe	170	LF	$100	$17,000
8-IN BFVs	5	EA	$1,000	$5,000
			Construction Subtotal	**$27,000**
			Contingency *(40% of construction)*	$10,800
			SUBTOTAL *(construction + contingency)*	$37,800
			Engineering, Admin/Legal *(20% of subtotal)*	$9,500
			TOTAL ESTIMATED CAPITAL COST	**$47,300**
ANNUAL O&M - ADDITIONAL OPERATING COSTS				
Settling Ponds Operation	16	Labor hrs /month	$100/hr	**$19,200**

WORK PLAN LONG-TERM MODIFICATIONS

Alternative 8 – Source Analysis

On-going O&M activities related to the collecting additional source samples and evaluating for aluminum concentration and turbidity include:

- Labor, Materials/Supplies, and Equipment to collect raw water samples from each location proposed along Forbestown Ditch
- Lab testing costs
- Costs to review and report lab test results

Table 14 summarizes the anticipated costs associated with this alternative includes the monthly additional sampling.

Table 14. Alternative 8 (Source Analysis) Estimated O&M Costs

Cost Item	Quantity	Units	Unit Cost	Estimated Cost
O&M MONTHLY COSTS				
Materials/Equipment to Collect Water Samples	6	EA Site	$100	$600
Sample Collection (labor)	4	HR	$100	$400
Lab Testing Analyses (Aluminum and Turbidity)	12	EA	$15	$180
Review and Report Lab Test Results	1	LS	$600	$600
Subtotal Additional Monthly Costs				**$1,800**
TOTAL ANNUAL ADDITIONAL O&M COST				**$21,600**

Alternative 9 – Convert Forbestown Ditch to a Closed Pipeline System

Table 15 summarizes the Alternative 9 Capital Costs estimates based on information from the January 2015 Preliminary Engineering Report for Option 1B. The District continues to evaluate other alternatives to provide a closed pipeline instead of an earthen open-ditch. All alternatives considered by the District includes maintaining 1.6 to 3 CFS to FWTP for domestic water supply.

Because the current Forbestown Ditch requires daily monitoring of the flows and frequent repairs along the 10-mile length of the ditch, converting the ditch to a closed pipeline should reduce the District's O&M costs. The pipeline improvement will allow District staff to refocus their efforts to maintaining other District facilities.

Table 15. Alternative 9 (Convert the Forbestown Ditch to a Closed Pipeline) Estimated Capital Costs

Forbestown 36-Inch HDPE Pipeline Estimated Costs of Construction				
Item	**Unit**	**Quantity**	**Est. Unit Cost**	**Cost**
Mobilization (5% of construction cost)	LS	1	$190,000	$190,000
Installation (25% of material cost)	LS	1	$946,000	$946,000
Clearing and Grubbing (2% of construction cost)	LS	1	$76,000	$76,000
WTP supply during construction	LS	1	$50,000	$50,000
HDPE ADS Piping 36-Inch **	LF	53,000	$66	$3,498,000
Catch Basin (Oldcastle Precast)48"x48" *	EA	53	$2,100	$111,300
Channel Transitions (located at falls)	EA	2	$15,000	$30,000
Parshall Flume	EA	7	$8,000	$56,000
Fittings***	LS	1	$87,000	$87,000
CONSTRUCTION SUBTOTAL			(rounded)	**$5,045,000**
Contingency		20% of construction		$1,009,000
SUBTOTAL *(construction + contingency)*				**$6,054,000**
Engineering			10%	$606,000
CM/Inspection			10%	$606,000
Permitting & Licensing & Mitigation			5%	$303,000
Admin / Legal			5%	$303,000
TOTAL ESTIMATED PROJECT COST				**$7,872,000**

**Based on 36-IN N-12 HPDE piping of the entire alignment*

COST AND BENEFIT COMPARISON

Table 16 compares the estimated capital costs, increases to the District's annual O&M costs, and the anticipated benefits of each alternative.

Table 16. Cost and Benefit Comparison of the Recommended Alternatives

Alternative	Capital Costs	Annual O&M Costs	Anticipated Benefits
OPERATIONAL NEAR-TERM ALTERNATIVES			
Alt. 4 – Ponds in Parallel	$47,300	$9,600	• Increases gravity dewatering operation • Increases hydraulic volume to accommodate higher backwash waste flows • Reduces overflows to on-site reservoir
Alt. 5 – Ponds in Series	$47,300	$19,200	• Increases solids settling time • Reduces overflows to on-site reservoir
LONG-TERM ALTERNATIVES			
Alt. 8 – Source Analysis	N/A	$21,600	• More extensive source water quality data to base long-term improvements • Increases understanding of FWTP aluminum sources
Alt. 9 – Convert Forbestown Ditch to a Pipeline	$7,800,000	N/A	• Eliminates uptake of aluminum from soils along Forbestown ditch • Reduces solids loading onto FWTP treatment facilities • Ensures FWTP receives sufficient raw water supply since water losses are minimized.

Recommended Compliance Alternative

The following observations may be perceived from the feasibility study evaluations:

- As also seen in Figure 4, the high EFF-001 aluminum results tended to exceed the 200 ug/L final limit when the RSW-001 samples also exceeded 200 ug/L. Since RSW-001 samples are only taken when water from the Forbestown Ditch is used to fill the on-site reservoir, the primary source of aluminum at the FWTP appears to be the Forbestown Ditch.
- Based on the solids production calculation shown in Table 7, the raw water is also the primary source of solids at the FWTP. The aluminum poly-blend coagulant aid only contributes less than 10% of the calculated annual dry solids load at the FWTP.
- The calculated 2013 total solids produced was only 14,400 pounds of dry solids. Based on typical solids loading rates used to design gravity dewatering lagoons, the existing dewatering ponds have sufficient effective area (see Table 8).
- As observed in Table 9 and Table 10, the FWTP flushing and backwashing operations contributed large volumes of backwash waste flows to the two settling ponds. The higher hydraulic flows into each settling ponds have resulted in the water surface levels rising above the crown of the overflow pipe, which is connected to the on-site reservoir.

NEAR-TERM RECOMMENDATION

Based on the above observations, ***implementation of Alternative 4*** in the near-term will result in improved operations of the existing settling ponds and minimal overflows to the on-site reservoir. Minimized overflows to the on-site reservoir will result in more effective compliance with the Order's final aluminum limit of 200 ug/L in the near-term.

Because of the significant knowledge that can be gained from more extensive source water analysis, ***implementation of Alternative 8 is also recommended*** for the near-term.

LONG-TERM RECOMMENDATION

Based on the above observations and the potential for a more sustainable raw water supply to the FWTP, ***implementation of Alternative 9 is recommended*** for the long-term strategy to comply with the Order's final aluminum limit of 200 ug/L.

APPENDIX A – 2013 AND 2014 MONITORING RESULTS

Cranmer Engineering, Inc
Integrated Engineering Services

Chemical Report

North Yuba Water District
P.O.Box 299
Brownsville CA 95919

Job Number: 6142266
Date Reported: 09/08/14
Date / Time Received: 08/26/14 12:39
System Number: 5810006

Sample Number: 6142266 - 1

Sample Site: EFF-001
Date / Time Collected: 08/26/14 8:00
Sample Collected By: JD

Parameter	Analysis Result	Reporting Units	Analytical Method	Date of Analysis	Analyst Initials	Reporting Limit
Total Recoverable Aluminum	237	µg/L	EPA 200.7	8/29/2014	AP	50
Calcium	3.9	mg/L	EPA 200.7	9/2/2014	AP	0.2
Total Recoverable Hardness as CaCO3	15	mg/L	Addition	9/2/2014		1
Magnesium	1.3	mg/L	EPA 200.7	9/2/2014	AP	0.1
Total Suspended Solids	2	mg/L	SM(18) 2540C	9/2/2014	AP	1

Sample Number: 6142266 - 2

Sample Site: RSW-001
Date / Time Collected: 08/26/14 8:05
Sample Collected By: JD

Parameter	Analysis Result	Reporting Units	Analytical Method	Date of Analysis	Analyst Initials	Reporting Limit
Total Recoverable Aluminum	215	µg/L	EPA 200.7	8/29/2014	AP	50

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Integrated Engineering Services

Chemical Report

North Yuba Water District
P.O.Box 299
Brownsville CA 95919

Job Number: 6142426
Date Reported: 09/23/14
Date / Time Received: 09/09/14 15:32
System Number: 5810006

Sample Number: 6142426 - 1

Sample Site: RSW-002
Date / Time Collected: 09/09/14 8:15
Sample Collected By: JD

Parameter	Analysis Result	Reporting Units	Analytical Method	Date of Analysis	Analyst Initials	Reporting Limit
Total Recoverable Aluminum	317	µg/L	EPA 200.7	9/11/2014	AP	50

Sample Number: 6142426 - 2

Sample Site: Eff-001
Date / Time Collected: 09/09/14 8:00
Sample Collected By: JD

Parameter	Analysis Result	Reporting Units	Analytical Method	Date of Analysis	Analyst Initials	Reporting Limit
Settleable Matter	ND	ml/L/hr	SM(18) 2540C	9/9/2014	AP	0.1
Total Suspended Solids	2	mg/L	SM(18) 2540C	9/17/2014	JS	1

Note: "ND" means "none detected" (ie, none was found in the sample at or above the reporting limit).

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Integrated Engineering Services

Chemical Report

North Yuba Water District
P.O.Box 299
Brownsville CA 95919

Job Number: 6142635
Date Reported: 10/13/14
Date / Time Received: 09/30/14 15:34
System Number: 5810006

Sample Number: 6142635 - 1

Sample Site: Eff-001
Date / Time Collected: 09/30/14 8:20
Sample Collected By: JD

Parameter	Analysis Result	Reporting Units	Analytical Method	Date of Analysis	Analyst Initials	Reporting Limit
Total Recoverable Aluminum	1,320	µg/L	EPA 200.7	10/2/2014	AP	50
Calcium	4.2	mg/L	EPA 200.7	10/2/2014	AP	0.2
Total Recoverable Hardness as CaCO3	17	mg/L	Addition	10/2/2014		1
Magnesium	1.6	mg/L	EPA 200.7	10/2/2014	AP	0.1
Total Suspended Solids	20	mg/L	SM(18) 2540C	10/7/2014	JS	1

Sample Number: 6142635 - 2

Sample Site: RSW-01
Date / Time Collected: 09/30/14 8:20
Sample Collected By: JD

Parameter	Analysis Result	Reporting Units	Analytical Method	Date of Analysis	Analyst Initials	Reporting Limit
Total Recoverable Aluminum	ND	µg/L	EPA 200.7	10/2/2014	AP	50

Note: "ND" means "none detected" (ie, none was found in the sample at or above the reporting limit).

Antonia M. Powers

Integrating people, land and water.

1188 East Main Street, Grass Valley, CA 95945
Phone: (530) 273-7284 | Fax: (530) 273-9507 | www.cranmerengineeringinc.com | E.L.A.P. Certification No. 1936
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Cranmer Engineering, Inc
Integrated Engineering Services

Chemical Report

North Yuba Water District
P.O.Box 299
Brownsville CA 95919

Job Number: 6142834
Date Reported: 11/20/14
Date / Time Received: 10/28/14 11:33
System Number: 5810006

Sample Number: 6142834 - 1

Sample Site: Eff-001
Date / Time Collected: 10/28/14 8:20

Sample Collected By: Jeremy Dimmett

Parameter	Analysis Result	Reporting Units	Analytical Method	Date of Analysis	Analyst Initials	Reporting Limit
Total Recoverable Aluminum	585	µg/L	EPA 200.7	10/29/2014	AP	50
Total Recoverable Cadmium	ND	µg/L	EPA 200.7	10/29/2014	AP	1
Calcium	4.4	mg/L	EPA 200.7	10/31/2014	AP	0.2
Total Recoverable Copper	ND	µg/L	EPA 200.7	10/29/2014	AP	10
Total Recoverable Hardness as CaCO3	18	mg/L	Addition	10/31/2014		1
Total Recoverable Lead	2.2	µg/L	EPA 239.2	11/10/2014	JS	2
Magnesium	1.6	mg/L	EPA 200.7	10/31/2014	AP	0.1
Total Recoverable Manganese	34	µg/L	EPA 200.7	10/29/2014	AP	10
Total Recoverable Mercury	ND	µg/L	EPA 245.1	11/5/2014	DRF	0.2
Total Recoverable Nickel	16	µg/L	EPA 200.7	10/29/2014	AP	10
Settleable Matter	ND	ml/L/hr	SM(18) 2540C	10/28/2014	AP	0.1
Total Recoverable Silver	ND	µg/L	EPA 200.7	10/31/2014	AP	25
Total Suspended Solids	5	mg/L	SM(18) 2540C	10/30/2014	AP	1
Total Recoverable Zinc	ND	µg/L	EPA 200.7	10/31/2014	AP	50

Samples were collected for analysis of Chlorpyrifos by EPA 614 and Diazinon by EPA 525.2. They were sent to North Coast Laboratories. A copy of their report is enclosed.

Note: "ND" means "none detected" (ie, none was found in the sample at or above the reporting limit).

Cranmer Engineering, Inc
Integrated Engineering Services

Chemical Report

North Yuba Water District
P.O.Box 299
Brownsville CA 95919

Job Number: 6142738
Date Reported: 10/23/14
Date / Time Received: 10/14/14 14:05
System Number: 5810006

Sample Number: 6142738 - 1

Sample Site: Eff-001
Date / Time Collected: 10/14/14 11:20
Sample Collected By: Jeremy D

Parameter	Analysis Result	Reporting Units	Analytical Method	Date of Analysis	Analyst Initials	Reporting Limit
Settleable Matter	ND	ml/L/hr	SM(18) 2540C	10/14/2014	AP	0.1
Total Suspended Solids	2	mg/L	SM(18) 2540C	10/20/2014	JS	1

Sample Number: 6142738 - 2

Sample Site: RSW-001
Date / Time Collected: 10/14/14 9:20
Sample Collected By: Jeremy D

Parameter	Analysis Result	Reporting Units	Analytical Method	Date of Analysis	Analyst Initials	Reporting Limit
Total Recoverable Aluminum	143	µg/L	EPA 200.7	10/16/2014	AP	50

Sample Number: 6142738 - 3

Sample Site: RSW-002
Date / Time Collected: 10/14/14 9:30
Sample Collected By: Jeremy D

Parameter	Analysis Result	Reporting Units	Analytical Method	Date of Analysis	Analyst Initials	Reporting Limit
Total Recoverable Aluminum	294	µg/L	EPA 200.7	10/16/2014	AP	50

Note: "ND" means "none detected" (ie, none was found in the sample at or above the reporting limit).

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Chemical Report

North Yuba Water District
P.O.Box 299
Brownsville CA 95919

Job Number: 6142989
Date Reported: 11/25/14
Date / Time Received: 11/14/14 12:29
System Number: 5810006

Sample Number: 6142989 - 1

Sample Site: RSW-001
Date / Time Collected: 11/14/14 8:00

Sample Collected By: JD

Parameter	Analysis Result	Reporting Units	Analytical Method	Date of Analysis	Analyst Initials	Reporting Limit
Total Recoverable Aluminum	274	µg/L	EPA 200.7	11/24/2014	AP	50

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Chemical Report

North Yuba Water District
P.O.Box 299
Brownsville CA 95919

Job Number: 6143070
Date Reported: 12/10/14
Date / Time Received: 11/25/14 14:50
System Number: 5810006

Sample Number: 6143070 - 1

Sample Site: Finished Water
Date / Time Collected: 11/25/14 8:15
Sample Collected By: JD

Parameter	Analysis Result	Reporting Units	Analytical Method	Date of Analysis	Analyst Initials	Reporting Limit
Nitrate as N	ND	mg/L	EPA 300.0	11/26/2014	AP	0.1

Sample Number: 6143070 - 2

Sample Site: Eff-001
Date / Time Collected: 11/25/14 8:20
Sample Collected By: JD

Parameter	Analysis Result	Reporting Units	Analytical Method	Date of Analysis	Analyst Initials	Reporting Limit
Total Recoverable Aluminum	511	µg/L	EPA 200.7	12/1/2014	AP	50
Calcium	8.6	mg/L	EPA 200.7	12/1/2014	AP	0.2
Total Recoverable Hardness as CaCO3	34	mg/L	Addition	12/1/2014		1
Magnesium	3.1	mg/L	EPA 200.7	12/1/2014	AP	0.1
Settleable Matter	ND	ml/L/hr	SM(18) 2540C	11/25/2014	MH	0.1
Total Suspended Solids	2	mg/L	SM(18) 2540C	12/1/2014	JS	1

Sample Number: 6143070 - 3

Sample Site: Rsw-001
Date / Time Collected: 11/25/14 8:25
Sample Collected By: JD

Parameter	Analysis Result	Reporting Units	Analytical Method	Date of Analysis	Analyst Initials	Reporting Limit
Total Recoverable Aluminum	281	µg/L	EPA 200.7	12/9/2014	AP	50

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Chemical Report

North Yuba Water District
P.O.Box 299
Brownsville CA 95919

Job Number: 6143232
Date Reported: 12/24/14
Date / Time Received: 12/16/14 15:31
System Number: 5810006

Sample Number: 6143232 - 1

Sample Site: Eff-001
Date / Time Collected: 12/15/14 14:40 **Sample Collected By:** JD

Parameter	Analysis Result	Reporting Units	Analytical Method	Date of Analysis	Analyst Initials	Reporting Limit
Total Suspended Solids	3	mg/L	SM(18) 2540C	12/22/2014	JS	1

Sample Number: 6143232 - 2

Sample Site: RSW-001
Date / Time Collected: 12/16/14 8:30 **Sample Collected By:** JD

Parameter	Analysis Result	Reporting Units	Analytical Method	Date of Analysis	Analyst Initials	Reporting Limit
Total Recoverable Aluminum	566	µg/L	EPA 200.7	12/18/2014	AP	50

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Chemical Report

North Yuba Water District
P.O.Box 299
Brownsville CA 95919

Job Number: 6143283
Date Reported: 12/31/14
Date / Time Received: 12/23/14 14:10
System Number: 5810006

Sample Number: 6143283 - 1

Sample Site: Eff-001
Date / Time Collected: 12/23/14 9:30

Sample Collected By: JD

Parameter	Analysis Result	Reporting Units	Analytical Method	Date of Analysis	Analyst Initials	Reporting Limit
Total Recoverable Aluminum	385	µg/L	EPA 200.7	12/24/2014	AP	50
Calcium	3.2	mg/L	EPA 200.7	12/26/2014	AP	0.2
Total Recoverable Hardness as CaCO3	15	mg/L	Addition	12/26/2014		1
Magnesium	1.8	mg/L	EPA 200.7	12/26/2014	AP	0.1
Settleable Matter	ND	ml/L/hr	SM(18) 2540C	12/23/2014	AP	0.1
Total Suspended Solids	3	mg/L	SM(18) 2540C	12/29/2014	JS	1

Note: "ND" means "none detected" (ie, none was found in the sample at or above the reporting limit).

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Chemical Report

North Yuba Water District
P.O.Box 299
Brownsville CA 95919

Job Number: 6150082
Date Reported: 01/26/15
Date / Time Received: 01/13/15 14:33
System Number: 5810006

Sample Number: 6150082 - 1

Sample Site: Eff-001
Date / Time Collected: 01/13/15 8:30
Sample Collected By: DB

Parameter	Analysis Result	Reporting Units	Analytical Method	Date of Analysis	Analyst Initials	Reporting Limit
Total Suspended Solids	2	mg/L	SM(18) 2540C	1/19/2015	HAS	1

Sample Number: 6150082 - 2

Sample Site: RSW-001
Date / Time Collected: 01/13/15 8:30
Sample Collected By: DB

Parameter	Analysis Result	Reporting Units	Analytical Method	Date of Analysis	Analyst Initials	Reporting Limit
Total Recoverable Aluminum	379	µg/L	EPA 200.7	1/16/2015	AP	50

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Chemical Report

North Yuba Water District
P.O.Box 299
Brownsville CA 95919

Job Number: 6150201
Date Reported: 02/09/15
Date / Time Received: 01/27/15 14:43
System Number: 5810006

Sample Number: 6150201 - 1

Sample Site: Eff-001
Date / Time Collected: 01/27/15 8:30

Sample Collected By: DB

Parameter	Analysis Result	Reporting Units	Analytical Method	Date of Analysis	Analyst Initials	Reporting Limit
Total Recoverable Aluminum	167	µg/L	EPA 200.7	1/30/2015	JS	50
Calcium	3.1	mg/L	EPA 200.7	2/3/2015	AP	0.2
Total Recoverable Hardness as CaCO3	17	mg/L	Addition	2/3/2015		1
Magnesium	2.3	mg/L	EPA 200.7	2/3/2015	AP	0.1
Total Suspended Solids	1	mg/L	SM(18) 2540C	2/2/2015	JS	1

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Chemical Report

North Yuba Water District
P.O.Box 299
Brownsville CA 95919

Job Number: 6150389
Date Reported: 02/28/15
Date / Time Received: 02/17/15 14:59
System Number: 5810006

Sample Number: 6150389 - 1

Sample Site: Eff-001
Date / Time Collected: 02/17/15 9:00
Sample Collected By: DB

Parameter	Analysis Result	Reporting Units	Analytical Method	Date of Analysis	Analyst Initials	Reporting Limit
Total Suspended Solids	2	mg/L	SM(18) 2540C	2/23/2015	JS	1

Sample Number: 6150389 - 2

Sample Site: Rsw-002
Date / Time Collected: 02/17/15 10:55
Sample Collected By: DB

Parameter	Analysis Result	Reporting Units	Analytical Method	Date of Analysis	Analyst Initials	Reporting Limit
Total Recoverable Aluminum	459	µg/L	EPA 200.7	2/19/2015	AP	50

Sample Number: 6150389 - 3

Sample Site: RSW-00[illegible]
Date / Time Collected: 02/17/15 10:30
Sample Collected By: DB

Parameter	Analysis Result	Reporting Units	Analytical Method	Date of Analysis	Analyst Initials	Reporting Limit
Total Recoverable Aluminum	843	µg/L	EPA 200.7	2/24/2015	AP	50

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Chemical Report

North Yuba Water District
P.O.Box 299
Brownsville CA 95919

Job Number: 6150331
Date Reported: 02/21/15
Date / Time Received: 02/10/15 14:20
System Number: 5810006

Sample Number: 6150331 - 1

Sample Site: Eff-001
Date / Time Collected: 02/10/15 8:30 **Sample Collected By:** DB

Parameter	Analysis Result	Reporting Units	Analytical Method	Date of Analysis	Analyst Initials	Reporting Limit
Settleable Matter	ND	ml/L/hr	SM(18) 2540C	2/10/2015	JS	0.1
Total Suspended Solids	5	mg/L	SM(18) 2540C	2/17/2015	AP	1

Sample Number: 6150331 - 2

Sample Site: RSW-001
Date / Time Collected: 02/10/15 8:30 **Sample Collected By:** DB

Parameter	Analysis Result	Reporting Units	Analytical Method	Date of Analysis	Analyst Initials	Reporting Limit
Total Recoverable Aluminum	392	µg/L	EPA 200.7	2/13/2015	AP	50

Note: "ND" means "none detected" (ie, none was found in the sample at or above the reporting limit).

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Chemical Report

North Yuba Water District
P.O.Box 299
Brownsville CA 95919

Job Number: 6150445
Date Reported: 03/06/15
Date / Time Received: 02/24/15 14:36
System Number: 5810006

Sample Number: 6150445 - 1

Sample Site: EFF-001
Date / Time Collected: 02/24/15 11:00

Sample Collected By: DB

Parameter	Analysis Result	Reporting Units	Analytical Method	Date of Analysis	Analyst Initials	Reporting Limit
Total Recoverable Aluminum	202	µg/L	EPA 200.7	2/26/2015	AP	50
Calcium	3.5	mg/L	EPA 200.7	2/26/2015	AP	0.2
Total Recoverable Hardness as CaCO3	24	mg/L	Addition	2/26/2015		1
Magnesium	3.7	mg/L	EPA 200.7	2/26/2015	AP	0.1
Settleable Matter	ND	ml/L/hr	SM(18) 2540C	2/24/2015	MH	0.1
Total Suspended Solids	3	mg/L	SM(18) 2540C	3/2/2015	JS	1

Note: "ND" means "none detected" (ie, none was found in the sample at or above the reporting limit).

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Chemical Report

North Yuba Water District
P.O.Box 299
Brownsville CA 95919

Job Number: 6150741
Date Reported: 04/02/15
Date / Time Received: 03/24/15 10:59
System Number: 5810006

Sample Number: 6150741 - 1

Sample Site: EFF-001
Date / Time Collected: 03/24/15 9:25
Sample Collected By: JD

Parameter	Analysis Result	Reporting Units	Analytical Method	Date of Analysis	Analyst Initials	Reporting Limit
Total Suspended Solids	1	mg/L	SM(18) 2540C	3/30/2015	JS	1

Sample Number: 6150741 - 2

Sample Site: RSW-001
Date / Time Collected: 03/20/15 13:20
Sample Collected By: JD

Parameter	Analysis Result	Reporting Units	Analytical Method	Date of Analysis	Analyst Initials	Reporting Limit
Total Recoverable Aluminum	192	µg/L	EPA 200.7	3/27/2015	JS	50

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Chemical Report

North Yuba Water District
P.O.Box 299
Brownsville CA 95919

Job Number: 6150793
Date Reported: 04/13/15
Date / Time Received: 03/31/15 14:18
System Number: 5810006

Sample Number: 6150793 - 1

Sample Site: EFF 001
Date / Time Collected: 03/31/15 9:30

Sample Collected By: JD

Parameter	Analysis Result	Reporting Units	Analytical Method	Date of Analysis	Analyst Initials	Reporting Limit
Total Recoverable Aluminum	242	µg/L	EPA 200.7	4/1/2015	AP	50
Calcium	3.4	mg/L	EPA 200.7	4/1/2015	AP	0.2
Total Recoverable Hardness as CaCO3	23	mg/L	Addition	4/1/2015		1
Magnesium	3.4	mg/L	EPA 200.7	4/1/2015	AP	0.1
Total Suspended Solids	3	mg/L	SM(18) 2540C	4/6/2015	JS	1

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Chemical Report

North Yuba Water District
P.O.Box 299
Brownsville CA 95919

Job Number: 6150862
Date Reported: 04/20/15
Date / Time Received: 04/07/15 14:29
System Number: 5810006

Sample Number: 6150862 - 1

Sample Site: Eff-001
Date / Time Collected: 04/07/15 10:00
Sample Collected By: DB

Parameter	Analysis Result	Reporting Units	Analytical Method	Date of Analysis	Analyst Initials	Reporting Limit
Settleable Matter	ND	ml/L/hr	SM(18) 2540C	4/7/2015	JS	0.1
Total Suspended Solids	2	mg/L	SM(18) 2540C	4/13/2015	JS	1

Sample Number: 6150862 - 2

Sample Site: Rsw-001
Date / Time Collected: 04/07/15 10:00
Sample Collected By: DB

Parameter	Analysis Result	Reporting Units	Analytical Method	Date of Analysis	Analyst Initials	Reporting Limit
Total Recoverable Aluminum	626	µg/L	EPA 200.7	4/10/2015	AP	50

Note: "ND" means "none detected" (ie, none was found in the sample at or above the reporting limit).

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Chemical Report

North Yuba Water District
P.O.Box 299
Brownsville CA 95919

Job Number: 6151033
Date Reported: 05/11/15
Date / Time Received: 04/28/15 14:29
System Number: 5810006

Sample Number: 6151033 - 1

Sample Site: Eff-001
Date / Time Collected: 04/28/15 10:00
Sample Collected By: DB

Parameter	Analysis Result	Reporting Units	Analytical Method	Date of Analysis	Analyst Initials	Reporting Limit
Total Recoverable Aluminum	197	µg/L	EPA 200.7	4/30/2015	AP	50
Calcium	3.6	mg/L	EPA 200.7	4/30/2015	AP	0.2
Total Recoverable Hardness as CaCO3	20	mg/L	Addition	4/30/2015		1
Magnesium	2.8	mg/L	EPA 200.7	4/30/2015	AP	0.1
Total Suspended Solids	4	mg/L	SM(18) 2540C	5/4/2015	JS	1

Sample Number: 6151033 - 2

Sample Site: RSw-001
Date / Time Collected: 04/28/15 12:00
Sample Collected By: DB

Parameter	Analysis Result	Reporting Units	Analytical Method	Date of Analysis	Analyst Initials	Reporting Limit
Total Recoverable Aluminum	275	µg/L	EPA 200.7	4/30/2015	AP	50

Sample Number: 6151033 - 3

Sample Site: SF-14
Date / Time Collected: 04/28/15 12:00
Sample Collected By: DB

Parameter	Analysis Result	Reporting Units	Analytical Method	Date of Analysis	Analyst Initials	Reporting Limit
Total Recoverable Aluminum	ND	µg/L	EPA 200.7	4/30/2015	AP	50

Note: "ND" means "none detected" (ie, none was found in the sample at or above the reporting limit).

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Chemical Report

North Yuba Water District
P.O.Box 299
Brownsville CA 95919

Job Number: 6151087
Date Reported: 05/18/15
Date / Time Received: 05/05/15 14:39
System Number: 5810006

Sample Number: 6151087 - 1

Sample Site: Rsw-001
Date / Time Collected: 05/05/15 10:00 **Sample Collected By:** JD

Parameter	Analysis Result	Reporting Units	Analytical Method	Date of Analysis	Analyst Initials	Reporting Limit
Total Recoverable Aluminum	1,650	µg/L	EPA 200.7	5/7/2015	JS	50

Sample Number: 6151087 - 2

Sample Site: Eff-001
Date / Time Collected: 05/05/15 10:00 **Sample Collected By:** JD

Parameter	Analysis Result	Reporting Units	Analytical Method	Date of Analysis	Analyst Initials	Reporting Limit
Settleable Matter	ND	ml/L/hr	SM(18) 2540C	5/5/2015	AP	0.1
Total Suspended Solids	3	mg/L	SM(18) 2540C	5/11/2015	JS	1

Note: "ND" means "none detected" (ie, none was found in the sample at or above the reporting limit).

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Chemical Report

North Yuba Water District
P.O.Box 299
Brownsville CA 95919

Job Number: 6151216
Date Reported: 06/01/15
Date / Time Received: 05/19/15 14:13
System Number: 5810006

Sample Number: 6151216 - 1

Sample Site: Eff-001
Date / Time Collected: 05/19/15 9:00
Sample Collected By: DB

Parameter	Analysis Result	Reporting Units	Analytical Method	Date of Analysis	Analyst Initials	Reporting Limit
Settleable Matter	ND	ml/L/hr	SM(18) 2540C	5/19/2015	MH	0.1
Total Suspended Solids	2	mg/L	SM(18) 2540C	5/26/2015	AP	1

Sample Number: 6151216 - 2

Sample Site: RSW-001
Date / Time Collected: 05/19/15 13:00
Sample Collected By: DB

Parameter	Analysis Result	Reporting Units	Analytical Method	Date of Analysis	Analyst Initials	Reporting Limit
Total Recoverable Aluminum	196	µg/L	EPA 200.7	5/29/2015	JS	50

Sample Number: 6151216 - 3

Sample Site: RSW-002
Date / Time Collected: 05/19/15 13:40
Sample Collected By: DB

Parameter	Analysis Result	Reporting Units	Analytical Method	Date of Analysis	Analyst Initials	Reporting Limit
Total Recoverable Aluminum	335	µg/L	EPA 200.7	5/29/2015	JS	50

Note: "ND" means "none detected" (ie, none was found in the sample at or above the reporting limit).

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Chemical Report

North Yuba Water District
P.O.Box 299
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Job Number: 6151289
Date Reported: 06/01/15
Date / Time Received: 05/27/15 13:30
System Number: 5810006

Sample Number: 6151289 - 1

Sample Site: Rsw-001
Date / Time Collected: 05/27/15 8:45
Sample Collected By: JD

Parameter	Analysis Result	Reporting Units	Analytical Method	Date of Analysis	Analyst Initials	Reporting Limit
Total Recoverable Aluminum	173	µg/L	EPA 200.7	5/29/2015	JS	50

Sample Number: 6151289 - 2

Sample Site: SF-14
Date / Time Collected: 05/27/15 9:20
Sample Collected By: JD

Parameter	Analysis Result	Reporting Units	Analytical Method	Date of Analysis	Analyst Initials	Reporting Limit
Total Recoverable Aluminum	ND	µg/L	EPA 200.7	5/29/2015	JS	50

Sample Number: 6151289 - 3

Sample Site: Oroleve Junction
Date / Time Collected: 05/27/15 9:40
Sample Collected By: JD

Parameter	Analysis Result	Reporting Units	Analytical Method	Date of Analysis	Analyst Initials	Reporting Limit
Total Recoverable Aluminum	57	µg/L	EPA 200.7	5/29/2015	JS	50

Note: "ND" means "none detected" (ie, none was found in the sample at or above the reporting limit).

Client Name: North Yuba Water District **Date Reported:** 06/01/15 **Job Number:** 6151289

Sample Number: 6151289 - 4

Sample Site: Woodleaf Siphon
Date / Time Collected: 05/27/15 10:05 **Sample Collected By:** JD

Parameter	Analysis Result	Reporting Units	Analytical Method	Date of Analysis	Analyst Initials	Reporting Limit
Total Recoverable Aluminum	89	µg/L	EPA 200.7	5/29/2015	JS	50

Sample Number: 6151289 - 5

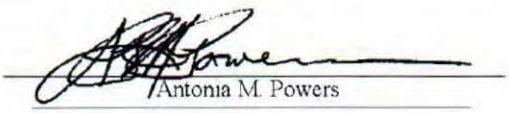
Sample Site: Whitisrock Road
Date / Time Collected: 05/27/15 10:20 **Sample Collected By:** JD

Parameter	Analysis Result	Reporting Units	Analytical Method	Date of Analysis	Analyst Initials	Reporting Limit
Total Recoverable Aluminum	123	µg/L	EPA 200.7	5/29/2015	JS	50

Sample Number: 6151289 - 6

Sample Site: Steppatts Weir
Date / Time Collected: 05/27/15 10:35 **Sample Collected By:** JD

Parameter	Analysis Result	Reporting Units	Analytical Method	Date of Analysis	Analyst Initials	Reporting Limit
Total Recoverable Aluminum	190	µg/L	EPA 200.7	5/29/2015	JS	50



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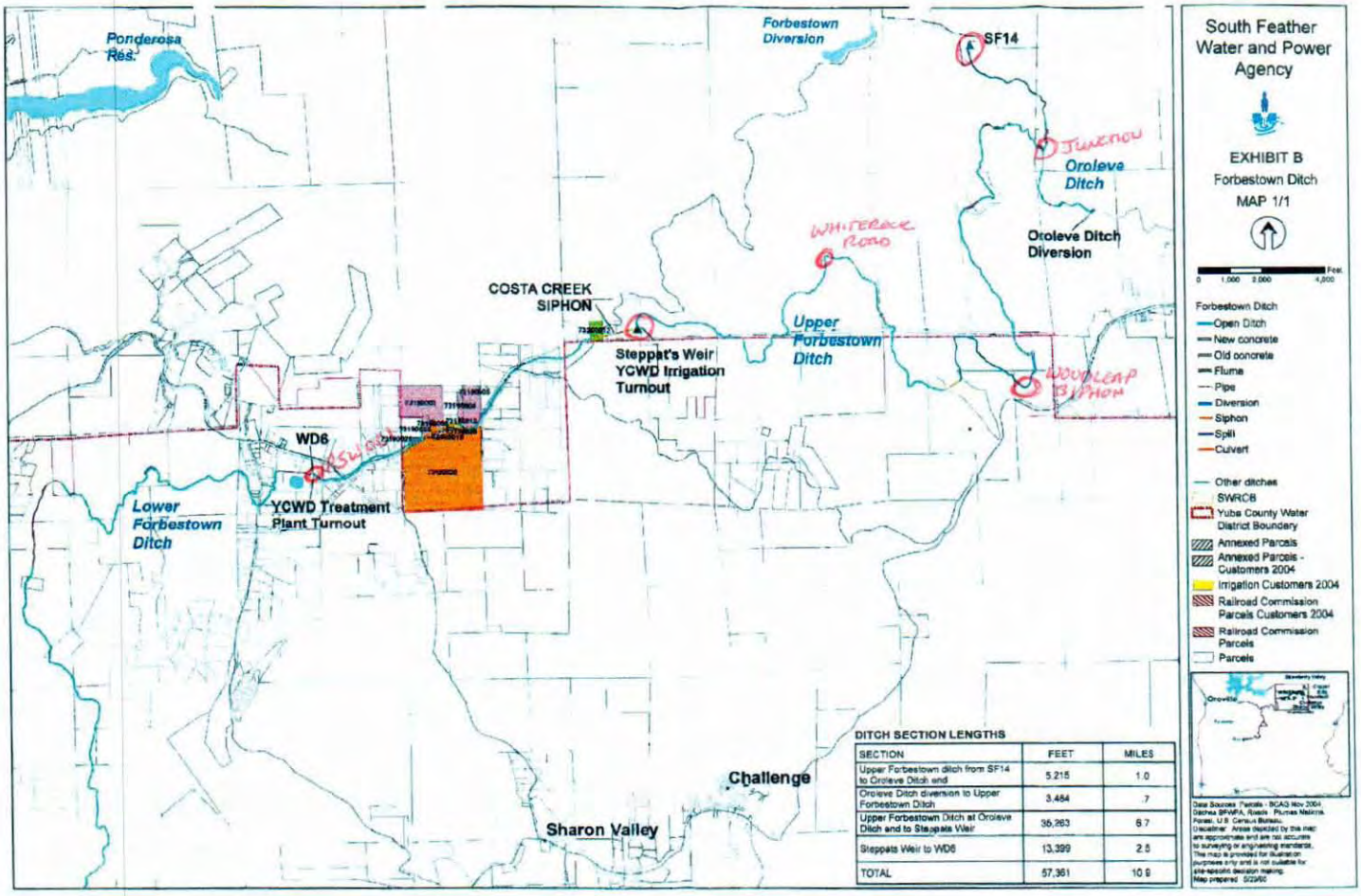


DITCH SECTION LENGTHS

SECTION	FEET	MILES
Upper Forbestown ditch from SF14 to Oroleve Ditch end	5,215	1.0
Oroleve Ditch diversion to Upper Forbestown Ditch	3,484	.7
Upper Forbestown Ditch at Oroleve Ditch end to Steppats Weir	35,263	6.7
Steppats Weir to WD6	13,399	2.5
TOTAL	57,361	10.9

North Yuba Water District Water Treatment Plant - Aluminum Sampling Results

August 2013 through May 2015

	2013					2014																		
Sample Location	20-Aug	24-Sep	22-Oct	26-Nov	24-Dec	28-Jan	25-Feb	27-Mar	8-Apr	29-Apr	13-May	27-May	24-Jun	7-Jul	22-Jul	26-Aug	9-Sep	30-Sep	14-Oct	28-Oct	14-Nov	25-Nov	26-Nov	16-Dec	23-Dec
	8/20/13	**9/24/13**	**10/22/13**	**11/26/13**	**12/24/13**	**1/28/14**	**2/25/14**	**3/27/14**	**4/8/14**	**4/29/14**	**5/13/14**	**5/27/14**	**6/24/14**	**7/7/14**	**7/22/14**	**8/26/14**	**9/9/14**	**9/30/14**	**10/14/14**	**10/28/14**	**11/14/14**	**11/25/14**	**11/26/14**	**12/16/14**	**12/23/14**
SF-14									111																
Orleva Junction									84																
SF-14 Junction									ND																
Woodleaf Siphon									71																
Whiterock Road																									
Steppats Weir									122																
RSW-001								394	186	361	579		221		4,650	215		ND	143	560	274	281		566	
INF-001																									
PND-001																									
PND-002																									
EFF-001	323	273	355	150	154	157	254	248		173		68			6,730	237		1,320		585		511			385
RSW-002	ND	ND				66								ND			317		294				130		
RSW-003																									
RSW -004																									

For Chart - All Data

Sample Location	**8/20/13**	**9/24/13**	**10/22/13**	**11/26/13**	**12/24/13**	**1/28/14**	**2/25/14**	**3/27/14**	**4/8/14**	**4/29/14**	**5/13/14**	**5/27/14**	**6/24/14**	**7/7/14**	**7/22/14**	**8/26/14**	**9/9/14**	**9/30/14**	**10/14/14**	**10/28/14**	**11/14/14**	**11/25/14**	**11/26/14**	**12/16/14**	**12/23/14**
EFF-001	323	273	355	150	154	157	254	248		173		68			6730	237		1320		585		511			385
Interim	798	798	798	798	798	798	798	798	798	798	798	798	798	798	798	798	798	798	798	798	798	798	798	798	798
Final	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200
RWS-001								394	186	361	579		221		4650	215		ND	143	560	274	281		566	
RSW-002	ND	ND				66								ND			317		294				130		

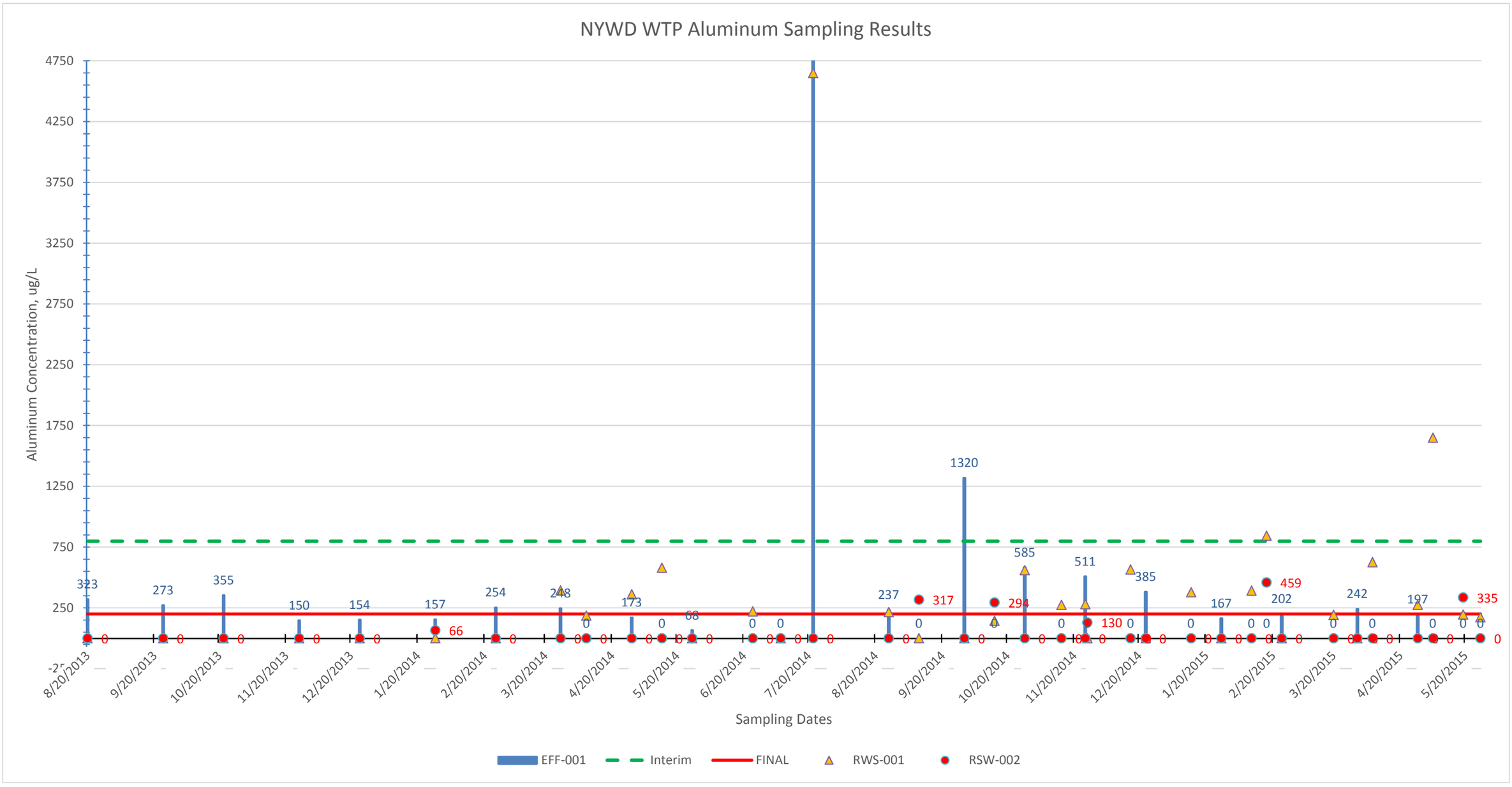
North Yuba Water District Water Treatment Plant - Aluminum Sampling Results

August 2013 through May 2015

	2015											
Sample Location	13-Jan	27-Jan	10-Feb	17-Feb	24-Feb	20-Mar	31-Mar	7-Apr	28-Apr	5-May	19-May	27-May
	1/13/15	**1/27/15**	**2/10/15**	**2/17/15**	**2/24/15**	**3/20/15**	**3/31/15**	**4/7/15**	**4/28/15**	**5/5/15**	**5/19/15**	**5/27/15**
SF-14									ND			ND
Orleva Junction												57
SF-14 Junction												
Woodleaf Siphon												89
Whiterock Road												123
Steppats Weir												190
RSW-001	379		392	843		192		626	275	1650	196	173
INF-001												
PND-001												
PND-002												
EFF-001		167			202		242		197			
RSW-002				459							335	
RSW-003												
RSW -004												

For Chart - All Data

Sample Location	**1/13/15**	**1/27/15**	**2/10/15**	**2/17/15**	**2/24/15**	**3/20/15**	**3/31/15**	**4/7/15**	**4/28/15**	**5/5/15**	**5/19/15**	**5/27/15**
EFF-001		167			202		242		197			
Interim	798	798	798	798	798	798	798	798	798	798	798	798
Final	200	200	200	200	200	200	200	200	200	200	200	200
RWS-001	379		392	843		192		626	275	1650	196	173
RSW-002				459							335	


NYWD WTP Aluminum Sampling Results
Aluminum Concentration, ug/L
4750
4250
3750
3250
2750
2250
1750
1250
750
250
323
273
355
150
154
157
66
254
248
173
68
1320
237
317
585
294
511
130
385
167
459
202
242
197
335
8/20/2013
9/20/2013
10/20/2013
11/20/2013
12/20/2013
1/20/2014
2/20/2014
3/20/2014
4/20/2014
5/20/2014
6/20/2014
7/20/2014
8/20/2014
9/20/2014
10/20/2014
11/20/2014
12/20/2014
1/20/2015
2/20/2015
3/20/2015
4/20/2015
5/20/2015
Sampling Dates
EFF-001
Interim
FINAL
RWS-001
RSW-002

APPENDIX B – FWTP OPERATIONAL DATA

NORTH YUBA WATER DISTRICT
FORBESTOWN WATER TREATMENT PLANT
OPERATORS RECORD
SYSTEM NO. 58-006
Jan 2013

NORTH YUBA WATER DISTRICT
FORBESTOWN WATER TREATMENT PLANT
OPERATORS RECORD
SYSTEM NO. 58-006
Jan 2012

			RAW WATER				AIR SCOUR BLOWERS						FILTERED WATER				TURBIDITY		PH				CHLORINATION-12.5% SODIUM HYPOCHLORITE										
	TIME	OPER	TO PLANT	USAGE	TO POND	FLOW	NO.1	NO.1	NO.2	NO.2	B		BACK WASH	TEST METERS	METER	PRODUC	RAW	TRT	RAW	TRT	WATER TEMP	ALK.			LB.	APPL.	TRT. RES.	11% SODA ASH			ALUM POLYMER BLEND NTU 926		
DATE	HR MIN	INIT	METER	MG	METER	MG	METER	USE	METER	USE	F	W	MG	flow-MG		MG					CENT.		INCH	16'ths	USE	MG/L	PPM	INCH	16'S	LBS.	INCH	16'S	LBS.
			935272	0.3541	1.1073	1.1073	603.3		562.2						237787								7	7				0	0	0.0	47	2	
01/01/13	7 30	KM	935588	0.3160	2.0072	* 2.0072	603.3	0.0	562.4	0.2	1	1	0.026284	0.000935	561265	0.5444	7.7	0.297	7.7	7.5	5.8		34	1	5.2	1.27	0.70	0	0 /16	0.00	47	7 /16	6.73
01/02/13	8 00	JD	935874	0.2860	0.7687	* 0.7687	603.3	0.0	562.4	0.0	0	0	0.000000	0.000921	305212	0.2961	4.1	0.099	8.0	7.6	5.5		31	11	3.9	1.58	0.70	0	0 /16	0.00	47	12 /16	6.73
01/03/13	8 00	JD	936222	0.3480	0.8457	* 0.8457	603.3	0.0	562.5	0.1	1	1	0.026284	0.000956	371540	0.3604	3.6	0.051	8.0	7.7	5.4		29	0	4.4	1.46	0.71	0	0 /16	0.00	48	1 /16	6.73
01/04/13	7 45	JD	936387	0.1650	1.1494	* 1.1494	603.3	0.0	562.6	0.1	1	0	0.006496	0.000859	171796	0.1666	4.3	0.040	8.3	7.7	5.7		27	12	2.0	1.47	0.70	0	0 /16	0.00	48	3 /16	2.69
01/05/13	9 00	TR	936747	0.3600	1.0361	* 1.0361	603.3	0.0	562.6	0.0	0	1	0.019788	0.000958	387925	0.3763	3.9	0.040	7.9	7.7	5.9		25	2	1.9	0.61	0.70	0	0 /16	0.00	48	7 /16	5.39
01/06/13	8 45	TR	937062	0.3150	0.8351	* 0.8351	603.3	0.0	562.7	0.1	1	0	0.006496	0.000935	334350	0.3176	4.6	0.070	8.2	7.7	6.2		22	14	3.7	1.39	0.70	0	0 /16	0.00	48	12 /16	6.73
01/07/13	8 00	JD	937317	0.2550	0.7913	* 0.7913	603.3	0.0	562.7	0.0	1	0	0.006496	0.000908	274692	0.2610	4.3	0.095	7.6	7.7	5.9	15.2	21	3	2.8	1.27	0.71	0	0 /16	0.00	48	14 /16	2.69
01/08/13	8 05	MB	937554	0.2370	0.6090	* 0.6090	603.3	0.0	562.7	0.0	0	1	0.019788	0.000893	212469	0.2018	3.5	0.043	7.6	7.7	6.8		23	4	3.1	1.84	0.71	0	0 /16	0.00	49	1 /16	4.04
01/09/13	7 35	JD	937815	0.2610	0.5866	* 0.5866	603.4	0.1	562.7	0.0	1	0	0.006496	0.000898	236053	0.2243	3.0	0.090	7.8	7.7	6.5		21	5	3.2	1.70	0.72	0	0 /16	0.00	49	5 /16	5.39
01/10/13	8 00	JD	938059	0.2440	0.7228	* 0.7228	603.4	0.0	562.7	0.0	0	1	0.019788	0.000895	229765	0.2183	3.2	0.061	7.8	7.7	5.9		19	8	3.0	1.63	0.70	0	0 /16	0.00	49	8 /16	4.04
01/11/13	8 05	JD	938509	0.4500	0.8127	* 0.8127	603.6	0.2	562.7	0.0	1	1	0.026284	0.000997	409406	0.3889	2.5	0.043	8.3	7.8	5.8		16	3	5.4	1.67	0.70	0	0 /16	0.00	49	12 /16	5.39
01/12/13	7 55	MB	938739	0.2300	0.6908	* 0.6908	603.7	0.1	562.7	0.0	0	1	0.019788	0.000891	210861	0.2003	2.8	0.070	7.8	7.8	6.1		14	7	2.9	1.72	0.71	0	0 /16	0.00	49	15 /16	4.04
01/13/13	9 50	MB	939054	0.3150	0.6593	* 0.6593	603.7	0.0	562.7	0.0	2	0	0.012992	0.000932	285744	0.2715	3.3	0.055	8.3	7.8	6.1		12	0	4.0	1.76	0.71	0	0 /16	0.00	50	3 /16	5.39
01/14/13	8 00	JD	939546	0.4920	0.4932	* 0.4932	603.8	0.1	562.7	0.0	2	0	0.012992	0.001012	449573	0.4271	2.4	0.074	8.3	7.9	5.7	16.0	9	3	4.6	1.29	0.70	0	0 /16	0.00	50	9 /16	8.08
01/15/13	8 00	JD	940065	0.5190	0.5099	* 0.5099	603.9	0.1	562.7	0.0	2	1	0.032780	0.001034	544641	0.5174	2.6	0.062	8.2	7.9	5.7		4	0	3.0	0.70	0.70	0	0 /16	0.00	50	15 /16	8.08
01/16/13	8 05	JD	940296	0.2310	0.4822	* 0.4822	604.0	0.1	562.7	0.0	0	1	0.019788	0.000893	243026	0.2309	2.8	0.082	8.4	7.9	5.3		2	0	3.3	1.70	0.70	0	0 /16	0.00	51	2 /16	4.04
01/17/13	8 00	JD	940812	0.5160	0.4368	* 0.4368	604.1	0.1	562.7	0.0	0	1	0.019788	0.001043	560430	0.5324	3.3	0.074	7.6	7.9	5.4		31	10	5.6	1.26	0.71	0	0 /16	0.00	51	8 /16	8.08
01/18/13	7 55	JD	941201	0.3890	0.3810	* 0.3810	604.2	0.1	562.7	0.0	1	2	0.046072	0.000971	397099	0.3772	2.5	0.091	8.2	7.9	5.7		30	0	2.7	0.85	0.72	0	0 /16	0.00	51	12 /16	5.39
01/19/13	9 15	JD	941522	0.3210	0.4911	* 0.4911	604.3	0.1	562.7	0.0	1	0	0.006496	0.000937	336797	0.3200	2.4	0.060	8.3	7.8	5.6		28	11	2.1	0.81	0.71	0	0 /16	0.00	51	14 /16	4.04
01/20/13	9 40	JD	941942	0.4200	0.6235	* 0.6235	604.4	0.1	562.7	0.0	1	1	0.026284	0.000991	449141	0.4267	2.2	0.052	8.3	7.9	5.6		26	15	2.9	0.81	0.69	0	0 /16	0.00	52	1 /16	4.04
01/21/13	7 25	JD	942195	0.2530	0.5228	* 0.5228	604.4	0.0	562.7	0.0	1	0	0.006496	0.000902	267501	0.2541	2.5	0.045	8.3	7.9	5.7		25	15	1.6	0.77	0.70	0	0 /16	0.00	52	3 /16	2.69
01/22/13	8 05	MB	942436	0.2410	0.5508	* 0.5508	604.5	0.1	562.7	0.0	1	0	0.006496	0.000887	245418	0.2331	2.0	0.076	7.9	7.9	6.6		24	15	1.6	0.84	0.67	0	0 /16	0.00	52	4 /16	1.35
01/23/13	8 10	MB	942848	0.4120	0.4814	* 0.4814	604.6	0.1	562.7	0.0	2	1	0.032780	0.000989	379270	0.3603	1.8	0.058	7.8	7.9	6.8	23.1	23	6	2.6	0.85	0.75	0	0 /16	0.00	52	6 /16	2.69
01/24/13	8 00	DB	943041	0.1930	0.4782	* 0.4782	604.6	0.0	562.7	0.0	0	0	0.000000	0.000865	175592	0.1668	1.8	0.065	7.6	7.8	7.1		22	8	1.4	1.03	0.73	0	0 /16	0.00	52	8 /16	2.69
01/25/13	8 00	DB	943503	0.4620	0.3402	* 0.3402	604.7	0.1	562.7	0.0	1	1	0.026284	0.001015	425472	0.4042	2.4	0.058	7.8	7.8	8.5		20	14	2.7	0.79	0.71	0	0 /16	0.00	52	10 /16	2.69
01/26/13	8 00	DB	943701	0.1980	0.3843	* 0.3843	604.8	0.1	562.7	0.0	1	0	0.006496	0.000871	176248	0.1674	2.4	0.055	7.6	7.8	7.4		20	0	1.4	1.03	0.71	0	0 /16	0.00	52	12 /16	2.69
01/27/13	8 00	DB	944081	0.3800	0.5688	* 0.5688	604.8	0.0	562.7	0.0	1	0	0.006496	0.000961	357663	0.3398	2.2	0.051	8.4	7.8	7.6		18	10	2.3	0.79	0.71	0	0 /16	0.00	52	14 /16	2.69
01/28/13	7 45	JD	944369	0.2880	0.6280	* 0.6280	604.9	0.1	562.7	0.0	1	1	0.026284	0.000915	257748	0.2449	2.0	0.077	7.7	7.8	6.9	17.1	17	8	1.8	0.90	0.70	0	0 /16	0.00	53	2 /16	5.39
01/29/13	8 05	JD	944644	0.2750	0.6100	* 0.6100	604.9	0.0	562.8	0.1	0	1	0.019788	0.000906	284941	0.2707	2.2	0.059	8.1	7.9	7.2		16	8	1.6	0.73	0.72	0	0 /16	0.00	53	4 /16	2.69
01/30/13	7 50	MB	944952	0.3080	0.5420	* 0.5420	604.9	0.0	562.8	0.0	1	0	0.006496	0.000926	327498	0.3111	2.2	0.046	8.2	7.9	7.7		15	8	1.6	0.63	0.71	0	0 /16	0.00	53	5 /16	1.35
01/31/13	8 00	KM	945168	0.2160	0.5112	* 0.5112	604.9	0.0	562.9	0.1	1	0	0.006496	0.000880	227135	0.2158	1.6	0.074	7.6	7.4	7.9		14	11	1.3	0.74	0.70	0	0 /16	0.00	35	9 /16	4.04
	TOTALS			9.8960		20.550		1.6		0.7			0.505292	0.028976		9.6274									89.6					0.00			138.67
	AVG.			0.3192		0.6629		0.1		0.0			0.016300			0.3106	3.0	0.071	8.0	7.8	6	17.9			2.9	1.16	0.71			0.00			4.47

WT. Of PAC plus WT. Of water

OPERATOR'S SIGNATURE:

AVG. NTU	0.07	AVG.PROD.	0.310561684
HIGH NTU	0.30	HIGH PROD.	0.54442705
LOW NTU	0.04	LOW PROD.	0.16664212

* All or some transverse inflow.

Comb. Ph GPM	0.3091
Comb.Turb. GPD	776.0

NORTH YUBA WATER DISTRICT
FORBESTOWN WATER TREATMENT PLANT
OPERATORS RECORD
SYSTEM NO. 58-006
Feb 2013

NORTH YUBA WATER DISTRICT
FORBESTOWN WATER TREATMENT PLANT
OPERATORS RECORD
SYSTEM NO. 58-006
Feb 2013

				RAW WATER				AIR SCOUR BLOWERS						FILTERED WATER				TURBIDITY		PH				CHLORINATION-12.5% SODIUM HYPOCHLORITE											
																										LB.	APPL.	TRT.	11% SODA ASH			ALUM POLYMER BLEND					
	TIME		OPER	TO PLANT	USAGE	TO POND		FLOW	NO.1	NO.1	NO.2	NO.2			BACK	TEST			RAW	TRT	RAW	TRT	WATER	ALK.				RES.			NTU 926				
DATE	HR	MI	INIT	METER	MG	METER		MG	METER	USE	METER	USE	F	W	WASH MG	METERS flow-MG	METER	PRODUC MG					TEMP CENT.		INCH	16'ths	USE	MG/L	PPM	INCH	16'S	LBS.	INCH	16'S	LBS.
				945168	0.3541	0.5112	*	0.5112	604.9		562.9						227135								14	11				0	0	0.0	35	7	
02/01/13	8	00	KM	945597	0.4290	0.3992	*	0.3992	604.9	0.0	563.0	0.1	1	1	0.026284	0.000987	444525	0.4312	2.2	0.049	7.8	7.9	8.2		13	6	2.1	0.60	0.71	0	0 /16	0.00	35	8 /16	1.35
02/02/13	7	30	KM	945777	0.1800	0.3366	*	0.3366	604.9	0.0	563.0	0.0	0	0	0.000000	0.000863	189339	0.1837	1.2	0.044	7.5	7.9	8.3		12	13	0.9	0.60	0.70	0	0 /16	0.00	35	9 /16	1.35
02/03/13	7	30	KM	946042	0.2650	0.3194	*	0.3194	604.9	0.0	563.1	0.1	1	0	0.006496	0.000906	278823	0.2705	1.8	0.041	7.5	7.9	8.3		11	11	1.8	0.82	0.70	0	0 /16	0.00	35	13 /16	5.39
02/04/13	8	05	JD	946423	0.3810	0.2770	*	0.2770	604.9	0.0	563.2	0.1	1	1	0.026284	0.000963	395235	0.3834	1.6	0.048	8.4	7.9	8.4	26.2	10	7	2.0	0.64	0.71	0	0 /16	0.00	35	15 /16	2.69
02/05/13	8	05	JD	946667	0.2440	0.2250	*	0.2250	605.0	0.1	563.2	0.0	0	1	0.019788	0.000906	219400	0.2128	2.2	0.051	7.9	7.9	8.4		9	10	1.9	1.07	0.72	0	0 /16	0.00	36	1 /16	2.69
02/06/13	8	00	JD	947006	0.3390	0.1927	*	0.1927	605.0	0.0	563.2	0.0	1	0	0.006496	0.000943	315390	0.2996	1.8	0.044	8.3	7.9	8.4		8	7	1.9	0.78	0.71	0	0 /16	0.00	36	4 /16	4.04
02/07/13	8	10	JD	947357	0.3510	0.1585	*	0.1585	605.1	0.1	563.2	0.0	1	0	0.006496	0.000947	323216	0.3071	1.6	0.044	8.0	7.9	8.5		35	10	1.9	0.74	0.70	0	0 /16	0.00	36	6 /16	2.69
02/08/13	8	00	JD	947566	0.2090	0.3015	*	0.3015	605.1	0.0	563.2	0.0	0	1	0.019788	0.000882	189949	0.1805	1.9	0.055	8.4	7.9	8.0		34	13	1.3	0.88	0.72	0	0 /16	0.00	36	8 /16	2.69
02/09/13	8	45	TR	947986	0.4200	0.4981	*	0.4981	605.2	0.1	563.2	0.0	1	0	0.006496	0.000976	393520	0.3738	1.9	0.046	8.1	7.8	7.8		33	5	2.5	0.79	0.70	0	0 /16	0.00	36	11 /16	4.04
02/10/13	9	30	TR	948251	0.2650	0.6860	*	0.6860	605.2	0.0	563.2	0.0	1	0	0.006496	0.000906	244107	0.2319	2.8	0.049	8.1	7.8	7.7		32	6	1.5	0.79	0.72	0	0 /16	0.00	36	13 /16	2.69
02/11/13	8	10	MB	948643	0.3920	0.6194	*	0.6194	605.4	0.2	563.2	0.0	1	1	0.026284	0.000971	349299	0.3318	1.4	0.045	7.9	7.8	7.7	21.6	31	0	2.3	0.81	0.66	0	0 /16	0.00	36	15 /16	2.69
02/12/13	8	00	MB	948840	0.1970	0.6382	*	0.6382	605.4	0.0	563.2	0.0	0	1	0.019788	0.000871	202230	0.1921	1.4	0.058	8.4	7.8	8.0		30	3	1.3	0.83	0.78	0	0 /16	0.00	37	2 /16	4.04
02/13/13	8	00	JD	949158	0.3180	0.6114	*	0.6114	605.4	0.0	563.3	0.1	1	1	0.026284	0.000930	321216	0.3052	1.4	0.067	8.5	7.9	7.6		28	15	2.0	0.80	0.71	0	0 /16	0.00	37	7 /16	6.73
02/14/13	8	00	MB	949595	0.4370	0.5809	*	0.5809	605.4	0.0	563.4	0.1	1	0	0.006496	0.000989	469164	0.4457	1.9	0.027	8.5	7.9	8.6		27	4	2.8	0.74	0.69	0	0 /16	0.00	37	9 /16	2.69
02/15/13	8	00	MB	949779	0.1840	0.5270	*	0.5270	605.4	0.0	563.4	0.0	1	0	0.006496	0.000869	195663	0.1859	1.1	0.031	8.5	7.8	9.0		26	8	3.0	1.94	0.70	0	0 /16	0.00	37	10 /16	1.35
02/16/13	8	15	MB	950249	0.4700	0.4974	*	0.4974	605.4	0.0	563.6	0.2	0	1	0.019788	0.001008	489400	0.4649	2.0	0.039	8.6	7.9	8.9		24	13	2.8	0.71	0.68	0	0 /16	0.00	37	14 /16	5.39
02/17/13	7	50	MB	950470	0.2210	0.4684	*	0.4684	605.4	0.0	563.6	0.0	1	0	0.006496	0.000887	232792	0.2212	2.0	0.037	8.7	7.6	8.9		24	0	1.3	0.72	0.69	0	0 /16	0.00	37	15 /16	1.35
02/18/13	8	10	MB	950744	0.2740	0.4775	*	0.4775	605.4	0.0	563.6	0.0	1	0	0.006496	0.000908	281372	0.2673	1.0	0.042	8.5	7.6	9.5	29.8	23	1	1.5	0.69	0.73	0	0 /16	0.00	38	1 /16	2.69
02/19/13	8	00	MB	951173	0.4290	0.4586	*	0.4586	605.4	0.0	563.7	0.1	0	1	0.019788	0.000993	138477	0.1316	0.9	0.037	7.6	7.6	9.7		21	8	2.6	2.33	0.70	0	0 /16	0.00	38	4 /16	4.04
02/20/13	8	00	JD	951371	0.1980	1.0633	*	1.0633	605.5	0.1	563.7	0.0	0	1	0.019788	0.000880	170148	0.1616	0.9	0.047	7.7	7.6	8.2		20	13	1.1	0.84	0.70	0	0 /16	0.00	38	7 /16	4.04
02/21/13	8	00	JD	951713	0.3420	0.7257	*	0.7257	605.5	0.0	563.7	0.0	1	0	0.006496	0.000943	316545	0.3007	1.3	0.038	7.9	7.5	8.2		19	8	2.1	0.86	0.70	0	0 /16	0.00	38	9 /16	2.69
02/22/13	7	55	JD	952063	0.3500	0.7097	*	0.7097	605.6	0.1	563.7	0.0	1	0	0.006496	0.000945	322260	0.3061	1.1	0.037	7.8	7.6	7.9		18	3	2.1	0.84	0.70	0	0 /16	0.00	38	12 /16	4.04
02/23/13	9	25	JD	952327	0.2640	0.7215	*	0.7215	605.7	0.1	563.7	0.0	1	1	0.026284	0.000908	233182	0.2215	1.0	0.041	7.8	7.6	8.3		17	4	1.5	0.83	0.72	0	0 /16	0.00	38	14 /16	2.69
02/24/13	9	40	JD	952680	0.3530	0.6389	*	0.6389	605.7	0.0	563.7	0.0	1	0	0.006496	0.000948	326260	0.3099	0.9	0.034	8.1	7.6	8.3		15	15	2.1	0.83	0.70	0	0 /16	0.00	39	0 /16	2.69
02/25/13	7	55	JD	952894	0.2140	0.5769	*	0.5769	605.8	0.1	563.7	0.0	1	0	0.006496	0.000878	193800	0.1841	0.9	0.033	8.0	7.5	8.4	23.4	15	2	1.3	0.87	0.69	0	0 /16	0.00	39	2 /16	2.69
02/26/13	8	00	JD	953155	0.2610	0.5881	*	0.5881	605.8	0.0	563.8	0.1	0	1	0.019788	0.000902	269388	0.2559	0.9	0.038	7.8	7.6	8.0		14	3	1.5	0.72	0.70	0	0 /16	0.00	39	4 /16	2.69
02/27/13	10	10	JD	953448	0.2930	0.6169	*	0.6169	605.8	0.0	563.8	0.0	0	0	0.000000	0.000919	297627	0.2827	0.8	0.041	8.1	7.6	8.8		13	1	1.8	0.78	0.69	0	0 /16	0.00	39	6 /16	2.69
02/28/13	8	00	JD	953781	0.3330	0.4792	*	0.4792	605.8	0.0	563.9	0.1	1	0	0.006496	0.000930	361255	0.3432	0.7	0.031	8.0	7.6	8.4		11	13	2.0	0.72	0.69	0	0 /16	0.00	39	9 /16	4.04
TOTALS					8.6130			14.393		0.9		1.0			0.360880	0.025956		7.7859									53.5				0.00			88.85
AVG.					0.3076			0.5140		0.0		0.0			0.012889			0.2781	1.4	0.043	8.1	7.7	8	25.3			1.9	0.88	0.70			0.00			3.17

		HIGH NTU	0.07
*	All or some transverse inflow.	LOW NTU	0.03

HIGH PROD.	0.46493
LOW PROD.	0.131553
Comb. Ph GPM	0.3091
Comb.Turb. GPD	776.0

NORTH YUBA WATER DISTRICT
FORBESTOWN WATER TREATMENT PLANT
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				RAW WATER				AIR SCOUR BLOWERS						FILTERED WATER				TURBIDITY		PH				CHLORINATION-12.5% SODIUM HYPOCHLORITE											
	TIME		OPER											BACK	TEST							WATER				LB.	APPL.	TRT.	11% SODA ASH			ALUM POLYMER BLEND		
																												RES.				NTU 926		
DATE	HR	MIN	INIT	TO PLANT METER	USAGE MG	TO POND METER		FLOW MG	NO.1 METER	NO.1 USE	NO.2 METER	NO.2 USE	F	B W	WASH MG	METERS flow-MG	METER	PRODUC MG	RAW	TRT	RAW	TRT	TEMP CENT.	ALK.	INCH	16'ths	USE	MG/L	PPM	INCH	16'S	LBS.	INCH	16'S	LBS.
				953781	0.3541	0.4792	*	0.4792	605.8		563.9						361255								11	13				0	0	0.0	39	9	
03/01/13	8	00	DB	954005	0.2240	0.4927	*	0.4927	605.8	0.0	564.0	0.1	0	1	0.019788	0.000884	212175	0.2058	4.5	0.074	8.1	7.5	9.7		11	0	1.8	1.27	0.71	0	0 /16	0.00	39	10 /16	1.35
03/02/13	8	00	DB	954303	0.2980	0.4546	*	0.4546	605.8	0.0	564.1	0.1	0	1	0.019788	0.000923	314197	0.3048	2.3	0.045	8.3	7.5	10.1		9	14	0.8	0.72	0.72	0	0 /16	0.00	39	12 /16	2.69
03/03/13	8	00	DB	954591	0.2880	0.4055	*	0.4055	605.8	0.0	564.1	0.0	1	0	0.006496	0.000919	306998	0.2978	1.8	0.054	8.3	7.6	10.2		8	12	1.8	0.74	0.72	0	0 /16	0.00	39	14 /16	2.69
03/04/13	8	00	JD	954964	0.3730	0.4048	*	0.4048	605.8	0.0	564.2	0.1	1	0	0.006496	0.000956	390999	0.3793	1.6	0.037	8.1	7.6	10.2	26.0	7	3	2.6	0.81	0.70	0	0 /16	0.00	40	2 /16	5.39
03/05/13	7	55	JD	955130	0.1660	0.4217	*	0.4217	605.8	0.0	564.2	0.0	0	1	0.019788	0.000859	150369	0.1459	1.0	0.041	8.0	7.6	10.6		6	9	1.9	1.56	0.70	0	0 /16	0.00	40	3 /16	1.35
03/06/13	8	00	JD	955511	0.3810	0.2737	*	0.2737	605.9	0.1	564.2	0.0	1	0	0.006496	0.000958	355721	0.3379	1.4	0.039	7.9	7.6	10.2		5	0	2.6	0.91	0.71	0	0 /16	0.00	40	5 /16	2.69
03/07/13	8	00	JD	955644	0.1330	0.0000		0.0000	605.9	0.0	564.2	0.0	1	0	0.006496	0.000839	114646	0.1089	1.3	0.035	7.9	7.6	10.3		4	7	0.9	1.01	0.71	0	0 /16	0.00	40	6 /16	1.35
03/08/13	9	00	KM	955922	0.2780	0.1460	*	0.1460	606.0	0.1	564.2	0.0	1	0	0.006496	0.000911	260953	0.2479	0.9	0.038	7.9	7.6	10.2		3	5	3.1	1.50	0.72	0	0 /16	0.00	40	8 /16	2.69
03/09/13	7	00	KM	956166	0.2440	0.0000		0.0000	606.0	0.0	564.2	0.0	1	0	0.006496	0.000898	228356	0.2169	1.0	0.036	8.2	7.6	11.0		35	13	1.5	0.83	0.69	0	0 /16	0.00	40	10 /16	2.69
03/10/13	8	00	KM	956467	0.3010	0.0000		0.0000	606.0	0.0	564.2	0.0	1	0	0.006496	0.000926	275670	0.2619	0.9	0.036	8.4	7.6	11.0		34	11	1.8	0.84	0.67	0	0 /16	0.00	40	13 /16	4.04
03/11/13	7	25	JD	956712	0.2450	0.0000		0.0000	606.1	0.1	564.2	0.0	1	0	0.006496	0.000906	223080	0.2119	0.9	0.031	8.1	7.6	11.3	22.4	33	12	1.5	0.87	0.77	0	0 /16	0.00	40	15 /16	2.69
03/12/13	8	50	JD	957055	0.3430	0.0000		0.0000	606.1	0.1	564.3	0.1	1	1	0.026284	0.000939	349965	0.3325	1.2	0.038	8.2	7.7	11.9		32	6	2.3	0.81	0.68	0	0 /16	0.00	41	1 /16	2.69
03/13/13	7	45	JD	957195	0.1400	0.0000		0.0000	606.1	0.0	564.3	0.0	0	0	0.000000	0.000839	135584	0.1288	0.8	0.040	8.0	7.7	12.0		32	2	0.4	0.38	0.70	0	0 /16	0.00	41	2 /16	1.35
03/14/13	7	40	JD	957445	0.2500	0.0000		0.0000	606.1	0.0	564.3	0.0	1	0	0.006496	0.000897	269795	0.2563	0.8	0.039	8.3	7.7	12.4		30	15	1.9	0.91	0.70	0	0 /16	0.00	41	4 /16	2.69
03/15/13	7	15	MB	957926	0.4810	0.0000		0.0000	606.1	0.0	564.4	0.1	0	1	0.019788	0.001008	510418	0.4849	0.8	0.040	8.1	7.8	13.3		29	0	3.0	0.74	0.69	0	0 /16	0.00	41	6 /16	2.69
03/16/13	7	05	JD	958043	0.1170	0.0000		0.0000	606.1	0.0	564.4	0.0	1	0	0.006496	0.000832	114351	0.1086	0.7	0.039	8.2	7.8	13.9		28	8	0.8	0.90	0.72	0	0 /16	0.00	41	8 /16	2.69
03/17/13	9	50	JD	958320	0.2770	0.0000		0.0000	606.1	0.0	564.4	0.0	0	0	0.000000	0.000904	408472	0.3880	0.7	0.045	8.2	7.8	14.1		27	5	5.6	1.73	0.70	0	0 /16	0.00	41	10 /16	2.69
03/18/13	7	35	JD	958645	0.3250	0.0000		0.0000	606.1	0.0	564.5	0.1	1	0	0.006496	0.000930	340260	0.3232	0.6	0.051	8.3	7.8	13.9	24.1	26	1	2.0	0.76	0.70	0	0 /16	0.00	41	13 /16	4.04
03/19/13	7	35	JD	958853	0.2080	0.0000		0.0000	606.2	0.1	564.5	0.0	1	1	0.026284	0.000885	176166	0.1674	0.6	0.051	8.3	7.7	14.4		25	4	1.3	0.95	0.72	0	0 /16	0.00	41	14 /16	4.04
03/20/13	7	40	JD	959107	0.2540	0.0000		0.0000	606.2	0.0	564.5	0.0	1	0	0.006496	0.000893	232840	0.2212	2.0	0.062	8.2	7.7	14.4		24	4	1.6	0.89	0.70	0	0 /16	0.00	42	0 /16	2.69
03/21/13	7	45	JD	959314	0.2070	1.2333	*	1.2333	606.2	0.0	564.5	0.0	0	0	0.000000	0.000872	192365	0.1827	6.8	0.121	8.0	7.7	13.0		23	5	1.5	1.01	0.72	0	0 /16	0.00	42	2 /16	2.69
03/22/13	7	45	JD	959545	0.2310	0.9028	*	0.9028	606.3	0.1	564.5	0.0	1	0	0.006496	0.000891	209527	0.1991	7.9	0.095	8.1	7.6	12.8		22	6	1.5	0.92	0.70	0	0 /16	0.00	42	4 /16	2.69
03/23/13	6	55	MB	959824	0.2790	0.6265	*	0.6265	606.4	0.1	564.5	0.0	0	1	0.019788	0.000911	250604	0.2381	8.1	0.094	7.9	7.5	13.0		21	5	1.7	0.88	0.69	0	0 /16	0.00	42	7 /16	4.04
03/24/13	6	50	MB	960124	0.3000	0.5041	*	0.5041	606.4	0.0	564.5	0.0	1	0	0.006496	0.000915	269490	0.2560	6.5	0.058	8.3	7.5	13.3		20	1	2.0	0.96	0.69	0	0 /16	0.00	42	11 /16	5.39
03/25/13	8	05	JD	960381	0.2570	0.3911	*	0.3911	606.5	0.1	564.5	0.0	1	0	0.006496	0.000895	231431	0.2199	5.7	0.058	7.8	7.5	12.4	21.0	19	1	1.6	0.89	0.70	0	0 /16	0.00	42	15 /16	5.39
03/26/13	7	40	MB	960622	0.2410	0.2907	*	0.2907	606.5	0.0	564.5	0.0	0	1	0.019788	0.000893	253403	0.2407	5.9	0.080	8.3	7.6	12.8		18	1	1.6	0.82	0.71	0	0 /16	0.00	43	1 /16	2.69
03/27/13	8	30	JD	960873	0.2510	0.2524	*	0.2524	606.5	0.0	564.6	0.1	1	0	0.006496	0.000891	257014	0.2442	5.3	0.062	8.3	7.5	13.1		17	1	1.6	0.80	0.70	0	0 /16	0.00	43	5 /16	2.69
03/28/13	7	40	JD	961127	0.2540	0.2016	*	0.2016	606.5	0.0	564.6	0.0	1	0	0.006496	0.000893	261209	0.2481	4.6	0.047	8.2	7.5	13.5		16	1	1.6	0.79	0.72	0	0 /16	0.00	43	7 /16	2.69
03/29/13	8	00	JD	961482	0.3550	0.2142	*	0.2142	606.5	0.0	564.7	0.1	1	1	0.026284	0.000947	364735	0.3465	4.0	0.048	8.0	7.5	13.6		14	13	2.0	0.71	0.71	0	0 /16	0.00	43	10 /16	4.04
03/30/13	9	10	JD	961634	0.1520	0.3495	*	0.3495	606.5	0.0	564.7	0.0	0	0	0.000000	0.000848	159649	0.1517	3.6	0.055	7.9	7.5	14.0		14	1	1.2	0.97	0.70	0	0 /16	0.00	43	14 /16	5.39
03/31/13	9	40	JD	961898	0.2640	0.3849	*	0.3849	606.5	0.0	564.8	0.1	1	0	0.006496	0.000900	273340	0.2597	3.5	0.045	8.1	7.6	13.9		13	0	1.7	0.80	0.72	0	0 /16	0.00	44	1 /16	4.04
	TOTALS				8.1170			7.9501		0.8		0.9			0.314508	0.027962		7.7166									57.9					0.00			96.93
	AVG.				0.2618			0.2565		0.0		0.0			0.010145			0.2489	2.8	0.053	8.1	7.6	12	23.4			1.9	0.93	0.71			0.00			3.13

OPERATOR'S SIGNATURE:

* All or some transverse inflow.

AVG. NTU	0.05	AVG.PROD.		0.248922	
HIGH NTU	0.12	HIGH PROD.		0.484897	
LOW NTU	0.03	LOW PROD.		0.108633	
Comb. Ph GPM			0.3091		
Comb.Turb. GPD			776.0		

WT. Of PAC plus WT. Of water

NORTH YUBA WATER DISTRICT
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				RAW WATER				AIR SCOUR BLOWERS						FILTERED WATER				TURBIDITY		PH				CHLORINATION-12.5% SODIUM HYPOCHLORITE											
DATE	TIME HR	MIN	OPER INIT	TO PLANT METER	USAGE MG	TO POND METER		FLOW MG	NO.1 METER	NO.1 USE	NO.2 METER	NO.2 USE	F	B W	BACK WASH MG	TEST METERS flow-MG	METER	PRODUC MG	RAW	TRT	RAW	TRT	WATER TEMP CENT.	ALK.	INCH	16'ths	LB. USE	APPL. MG/L	TRT. RES. PPM	11% SODA ASH INCH	16'S	LBS.	ALUM POLYMER BLEND NTU 926 INCH	16'S	LBS.
				961898	0.3541	0.3849	*	0.3849	606.5		564.8						273340								13	0				0	0	0.0	44	1	
04/01/13	8	00	JD	962127	0.2290	1.0154	*	1.0154	606.5	0.0	564.8	0.0	1	0	0.006496	0.000882	232980	0.2260	8.7	0.082	8.1	7.5	13.9	29.2	12	1	5.2	1.27	0.70	0	0 /16	0.00	44	4 /16	4.04
04/02/13	7	40	JD	962376	0.2490	1.0816	*	1.0816	606.6	0.1	564.8	0.0	1	1	0.026284	0.000902	218736	0.2122	5.6	0.063	7.9	7.5	13.7		11	4	1.3	0.75	0.72	0	0 /16	0.00	44	7 /16	4.04
04/03/13	7	40	MB	962627	0.2510	0.8277	*	0.8277	606.6	0.0	564.8	0.0	1	0	0.006496	0.000893	227279	0.2205	4.6	0.085	7.9	7.5	14.3		10	3	1.7	0.95	0.72	0	0 /16	0.00	44	9 /16	2.69
04/04/13	8	00	JD	962891	0.2640	0.6448	*	0.6448	606.7	0.1	564.8	0.0	1	0	0.006496	0.000897	240275	0.2331	4.7	0.053	7.9	7.5	14.1		9	0	1.9	1.00	0.69	0	0 /16	0.00	44	12 /16	4.04
04/05/13	8	00	MB	963086	0.1950	0.8977	*	0.8977	606.8	0.1	564.8	0.0	1	0	0.006496	0.000867	175043	0.1698	4.5	0.058	7.9	7.5	14.6		8	5	1.9	1.34	0.72	0	0 /16	0.00	44	14 /16	2.69
04/06/13	8	00	DB	963368	0.2820	0.8316	*	0.8316	606.8	0.0	564.8	0.0	0	1	0.019788	0.000908	243896	0.2317	4.5	0.056	7.8	7.4	13.8		35	4	1.9	1.00	0.70	0	0 /16	0.00	45	2 /16	5.39
04/07/13	8	00	DB	963619	0.2510	0.7000	*	0.7000	606.9	0.1	564.8	0.0	1	0	0.006496	0.000893	228136	0.2167	4.0	0.042	7.9	7.4	14.5		34	4	1.6	0.91	0.70	0	0 /16	0.00	45	5 /16	4.04
04/08/13	7	40	JD	963850	0.2310	0.6765	*	0.6765	606.9	0.0	564.8	0.0	0	0	0.000000	0.000889	215075	0.2043	5.6	0.045	7.9	7.5	13.5	27.1	33	6	3.1	1.82	0.70	0	0 /16	0.00	45	8 /16	4.04
04/09/13	7	35	JD	964066	0.2160	0.5910	*	0.5910	606.9	0.0	564.9	0.1	0	1	0.019788	0.000880	217876	0.2070	3.2	0.046	8.0	7.4	13.8		32	8	1.4	0.83	0.72	0	0 /16	0.00	45	11 /16	4.04
04/10/13	7	40	JD	964263	0.1970	0.1322	*	0.1322	606.9	0.0	564.9	0.0	1	0	0.006496	0.000867	201682	0.1916	3.0	0.042	8.0	7.5	14.0		31	12	1.2	0.77	0.70	0	0 /16	0.00	45	14 /16	4.04
04/11/13	7	30	JD	964582	0.3190	0.5980	*	0.5980	606.9	0.0	565.0	0.1	1	0	0.006496	0.000923	336898	0.3201	2.8	0.040	8.1	7.5	14.3		30	8	2.0	0.77	0.70	0	0 /16	0.00	46	1 /16	4.04
04/12/13	7	45	JD	964801	0.2190	0.4988	*	0.4988	606.9	0.1	565.0	0.0	0	0	0.000000	0.000878	223315	0.2121	2.6	0.037	8.0	7.5	14.8		29	9	1.5	0.87	0.71	0	0 /16	0.00	46	4 /16	4.04
04/13/13	8	00	KM	965198	0.3970	0.4221	*	0.4221	606.9	0.0	565.1	0.1	1	1	0.026284	0.000976	404896	0.3847	2.2	0.036	8.0	7.6	14.7		28	0	2.6	0.80	0.71	0	0 /16	0.00	46	9 /16	6.73
04/14/13	7	00	KM	965511	0.3130	0.3392	*	0.3392	606.9	0.0	565.1	0.0	1	0	0.006496	0.000911	325053	0.3088	2.2	0.032	8.1	7.5	16.6		26	11	2.1	0.83	0.70	0	0 /16	0.00	46	13 /16	5.39
04/15/13	7	40	JD	965726	0.2150	0.3303	*	0.3303	606.9	0.0	565.2	0.1	1	0	0.006496	0.000874	213604	0.2029	2.1	0.034	8.1	7.6	15.6	23.1	25	14	3.0	1.77	0.72	0	0 /16	0.00	47	0 /16	4.04
04/16/13	7	30	JD	966022	0.2960	0.3052	*	0.3052	607.0	0.1	565.2	0.0	0	1	0.019788	0.000926	268818	0.2554	1.9	0.033	8.2	7.5	15.0		24	11	1.9	0.91	0.72	0	0 /16	0.00	47	3 /16	4.04
04/17/13	7	45	JD	966376	0.3540	0.3140	*	0.3140	607.1	0.1	565.2	0.0	1	0	0.006496	0.000947	314875	0.2991	1.9	0.040	8.3	7.6	14.5		23	5	2.2	0.88	0.72	0	0 /16	0.00	47	8 /16	6.73
04/18/13	7	45	JD	966605	0.2290	0.2718	*	0.2718	607.1	0.0	565.2	0.0	0	0	0.000000	0.000882	209985	0.1995	1.6	0.035	8.1	7.6	14.5		22	5	1.6	0.98	0.70	0	0 /16	0.00	47	11 /16	4.04
04/19/13	7	40	JD	967109	0.5040	0.2207	*	0.2207	607.2	0.1	565.2	0.0	2	1	0.032780	0.001013	445615	0.4233	1.5	0.030	8.3	7.7	15.2		20	5	3.3	0.93	0.69	0	0 /16	0.00	48	1 /16	4.04
04/20/13	8	30	TR	967391	0.2820	0.1652	*	0.1652	607.3	0.1	565.2	0.0	2	0	0.012992	0.000902	255830	0.2430	1.4	0.042	8.2	7.7	15.6		19	3	1.8	0.91	0.72	0	0 /16	0.00	48	4 /16	4.04
04/21/13	8	30	TR	967822	0.4310	0.0582	*	0.0582	607.4	0.1	565.2	0.0	1	1	0.026284	0.000974	385453	0.3662	1.4	0.034	8.2	7.8	15.6		17	5	3.1	1.01	0.70	0	0 /16	0.00	48	9 /16	6.73
04/22/13	7	30	JD	968174	0.3520	0.0000		0.0000	607.4	0.0	565.2	0.0	1	0	0.006496	0.000926	310652	0.2951	1.2	0.035	8.2	7.9	17.0	25.8	15	13	2.5	1.00	0.72	0	0 /16	0.00	48	14 /16	6.73
04/23/13	7	45	JD	968639	0.4650	0.0000		0.0000	607.4	0.0	565.3	0.1	1	1	0.026284	0.000993	481978	0.4579	1.2	0.033	8.2	7.7	16.8		14	3	2.7	0.70	0.70	0	0 /16	0.00	49	3 /16	6.73
04/24/13	7	45	JD	969135	0.4960	0.0000		0.0000	607.4	0.0	565.3	0.0	1	0	0.006496	0.001006	514563	0.4888	2.0	0.032	8.4	7.9	17.0		11	11	4.1	1.00	0.69	0	0 /16	0.00	49	9 /16	8.08
04/25/13	7	30	JD	969453	0.3180	0.0000		0.0000	607.4	0.0	565.4	0.1	1	1	0.026284	0.000939	318134	0.3022	1.0	0.031	8.5	8.0	17.7		10	5	2.3	0.89	0.71	0	0 /16	0.00	49	14 /16	6.73
04/26/13	8	00	JD	969886	0.4330	0.5089	*	0.5089	607.4	0.0	565.5	0.1	2	0	0.012992	0.000997	446695	0.4244	1.8	0.034	8.5	8.0	17.8		8	6	3.2	0.90	0.70	0	0 /16	0.00	50	4 /16	8.08
04/27/13	7	00	MB	970330	0.4440	0.8364	*	0.8364	607.4	0.0	565.6	0.1	0	1	0.019788	0.000993	454745	0.4320	3.9	0.032	8.3	8.0	18.9		6	7	3.2	0.88	0.69	0	0 /16	0.00	50	8 /16	2.69
04/28/13	8	45	MB	970857	0.5270	0.8842	*	0.8842	607.4	0.0	565.7	0.1	2	0	0.012992	0.001043	548533	0.5211	3.8	0.025	8.2	7.9	18.8		4	2	3.8	0.87	0.68	0	0 /16	0.00	50	14 /16	8.08
04/29/13	8	15	JD	971324	0.4670	0.8692	*	0.8692	607.4	0.0	565.8	0.1	2	1	0.032780	0.001025	474135	0.4504	2.2	0.027	8.3	8.0	18.4	23.0	2	0	3.5	0.93	0.72	0	0 /16	0.00	51	5 /16	9.42
04/30/13	7	50	JD	971841	0.5170	0.6377	*	0.6377	607.5	0.1	565.8	0.0	1	0	0.006496	0.001054	478437	0.4545	8.4	0.247	7.4	7.3	13.8		32	8	3.5	0.92	0.70	0	0 /16	0.00	51	13 /16	10.77
	TOTALS				9.9430			14.6584		1.1		1.0			0.399556	0.028059		9.1544									75.2					0.00			160.21
	AVG.				0.3314			0.4886		0.0		0.0			0.013319			0.3051	3.2	0.049	8.1	7.6	15	25.6			2.5	0.98	0.71			0.00			5.34

OPERATOR'S SIGNATURE:

* All or some transverse inflow.

AVG. NTU	0.05	AVG.PROD.	0.305147289
HIGH NTU	0.25	HIGH PROD.	0.52110635
LOW NTU	0.03	LOW PROD.	0.16979171
Comb. Ph GPM	0.3091		
Comb.Turb. GPD	776.0		

WT. Of PAC plus WT. Of water

NORTH YUBA WATER DISTRICT
FORBESTOWN WATER TREATMENT PLANT
OPERATORS RECORD
SYSTEM NO. 58-006
May 2013

NORTH YUBA WATER DISTRICT
FORBESTOWN WATER TREATMENT PLANT
OPERATORS RECORD
SYSTEM NO. 58-006
May 2012

				RAW WATER				AIR SCOUR BLOWERS						FILTERED WATER				TURBIDITY		PH				CHLORINATION-12.5% SODIUM HYPOCHLORITE											
	TIME		OPER	TO PLANT	USAGE	TO POND		FLOW	NO.1	NO.1	NO.2	NO.2		B	BACK WASH	TEST METERS	METER	PRODUC	RAW	TRT	RAW	TRT	WATER TEMP	ALK.		LB.	APPL.	TRT. RES.	11% SODA ASH			ALUM POLYMER BLEND NTU 926		
DATE	HR	MIN	INIT	METER	MG	METER		MG	METER	USE	METER	USE	F	W	MG	flow-MG		MG					CENT.		INCH	16'ths	USE	MG/L	PPM	INCH	16'S	LBS.	INCH	16'S	LBS.
				971841	0.3541	0.6377		0.6377	607.5		565.8						478437								32	8				0	0	0.0	51	14	
05/01/13	8	00	JD	972259	0.4180	0.5148	*	0.5148	607.6	0.1	565.8	0.0	1	1	0.026284	0.000982	379035	0.3677	9.1	0.034	7.4	7.4	14.2			30	2	3.9	1.27	0.70	0	0 /16	0.00	52	1 /16	4.04
05/02/13	8	00	JD	972781	0.5220	0.8254	*	0.8254	607.7	0.1	565.8	0.0	2	1	0.032780	0.001032	465766	0.4518	7.3	0.048	7.6	7.4	11.3			27	10	4.1	1.09	0.70	0	0 /16	0.00	52	4 /16	4.04
05/03/13	7	45	JD	973161	0.3800	0.9791	*	0.9791	607.8	0.1	565.8	0.0	1	1	0.026284	0.000963	345576	0.3352	6.8	0.037	7.6	7.4	11.4			26	13	1.3	0.48	0.71	0	0 /16	0.00	52	6 /16	2.69
05/04/13	7	30	DB	973753	0.5920	0.4183	*	0.4183	607.9	0.1	565.8	0.0	2	0	0.012992	0.001056	539979	0.5238	6.9	0.061	7.8	7.3	12.4			23	3	5.9	1.36	0.71	0	0 /16	0.00	52	9 /16	4.04
05/05/13	7	30	DB	974183	0.4300	0.5403	*	0.5403	608.0	0.1	565.8	0.0	0	1	0.019788	0.000991	398984	0.3870	10.7	0.063	7.8	7.3	11.9			21	4	1.9	0.59	0.69	0	0 /16	0.00	52	10 /16	1.35
05/06/13	8	45	MB	974739	0.5560	0.5176	*	0.5176	608.1	0.1	565.8	0.0	2	0	0.012992	0.001047	530410	0.5145	5.3	0.118	7.8	7.4	11.9	27.8		18	9	4.4	1.03	0.68	0	0 /16	0.00	52	14 /16	5.39
05/07/13	7	55	MB	975098	0.3590	0.6054	*	0.6054	608.1	0.0	566.0	0.2	2	1	0.032780	0.000948	350579	0.3401	7.3	0.080	8.0	7.4	12.2			17	1	2.5	0.87	0.68	0	0 /16	0.00	53	0 /16	2.69
05/08/13	8	05	JD	975427	0.3290	0.9949	*	0.9949	608.1	0.0	566.0	0.0	1	0	0.006496	0.000928	342299	0.3320	6.6	0.041	7.6	7.4	11.9			15	12	2.1	0.78	0.70	0	0 /16	0.00	53	3 /16	4.04
05/09/13	8	00	JD	975730	0.3030	1.0770	*	1.0770	608.1	0.0	566.1	0.1	1	1	0.026284	0.000919	314025	0.3046	5.1	0.056	7.7	7.4	11.6			14	12	1.6	0.64	0.70	0	0 /16	0.00	53	4 /16	1.35
05/10/13	7	55	JD	976191	0.4610	0.6172	*	0.6172	608.1	0.0	566.2	0.1	1	0	0.006496	0.000991	487525	0.4729	5.6	0.025	7.6	7.3	12.1			13	2	2.7	0.67	0.69	0	0 /16	0.00	53	7 /16	4.04
05/11/13	9	25	JD	976695	0.5040	0.5976	*	0.5976	608.1	0.0	566.3	0.1	2	1	0.032780	0.001012	523099	0.5074	5.1	0.024	7.7	7.4	13.2			11	1	3.4	0.80	0.73	0	0 /16	0.00	53	10 /16	4.04
05/12/13	9	55	JD	977238	0.5430	0.5073	*	0.5073	608.1	0.0	566.4	0.1	1	0	0.006496	0.001032	576940	0.5596	5.0	0.023	7.6	7.3	13.1			8	10	4.0	0.86	0.70	0	0 /16	0.00	53	14 /16	5.39
05/13/13	8	05	JD	977821	0.5830	0.3639	*	0.3639	608.1	0.0	566.5	0.1	2	1	0.032780	0.001062	611346	0.5930	4.7	0.030	7.7	7.4	13.0	24.2		6	2	4.1	0.83	0.69	0	0 /16	0.00	54	1 /16	4.04
05/14/13	8	10	JD	978378	0.5570	0.4837	*	0.4837	608.2	0.1	566.5	0.0	1	1	0.026284	0.001050	511150	0.4958	5.1	0.027	7.6	7.4	12.7			3	9	4.2	1.01	0.72	0	0 /16	0.00	54	6 /16	6.73
05/15/13	7	45	JD	978969	0.5910	0.3679	*	0.3679	608.4	0.2	566.5	0.0	2	1	0.032780	0.001071	544033	0.5277	5.0	0.031	7.6	7.4	13.3			0	13	3.0	0.68	0.70	0	0 /16	0.00	54	9 /16	4.04
05/16/13	8	00	KM	979473	0.5040	0.4757	*	0.4757	608.4	0.0	566.5	0.0	2	0	0.012992	0.001021	465855	0.4519	4.0	0.024	7.7	7.4	12.7			29	9	3.2	0.85	0.70	0	0 /16	0.00	54	13 /16	5.39
05/17/13	8	00	JD	979731	0.2580	0.7270	*	0.7270	608.6	0.2	566.5	0.0	1	0	0.006496	0.000902	239535	0.2323	7.0	0.027	7.7	7.4	12.2			28	6	1.6	0.83	0.69	0	0 /16	0.00	55	1 /16	5.39
05/18/13	8	00	KM	980275	0.5440	0.4686	*	0.4686	608.7	0.1	566.5	0.0	1	1	0.026284	0.001050	502296	0.4872	4.5	0.026	7.6	7.4	11.4			25	3	5.2	1.28	0.67	0	0 /16	0.00	55	4 /16	4.04
05/19/13	8	00	KM	980704	0.4290	0.6021	*	0.6021	608.8	0.1	566.5	0.0	2	1	0.032780	0.000987	383921	0.3724	4.3	0.058	7.5	7.4	12.1			23	14	2.1	0.69	0.70	0	0 /16	0.00	55	8 /16	4.04
05/20/13	8	00	JD	981196	0.4920	0.5639	*	0.5639	608.8	0.0	566.5	0.0	1	0	0.006496	0.001012	455115	0.4415	5.2	0.037	7.8	7.4	11.8	15.2		21	8	3.9	1.06	0.71	0	0 /16	0.00	55	9 /16	1.35
05/21/13	8	30	JD	981809	0.6130	0.5785	*	0.5785	608.8	0.0	566.6	0.1	1	1	0.026284	0.001062	645395	0.6260	7.3	0.039	7.6	7.4	13.7			19	11	3.0	0.57	0.70	0	0 /16	0.00	55	12 /16	4.04
05/22/13	8	00	JD	982344	0.5350	0.6149	*	0.6149	608.8	0.0	566.8	0.2	2	1	0.032780	0.001043	564987	0.5480	7.7	0.045	7.7	7.4	11.3			16	3	5.7	1.25	0.70	0	0 /16	0.00	56	0 /16	5.39
05/23/13	7	50	JD	982910	0.5660	0.5687	*	0.5687	608.8	0.0	566.9	0.1	2	0	0.012992	0.001049	600135	0.5821	5.2	0.030	7.8	7.4	10.2			13	8	4.4	0.91	0.70	0	0 /16	0.00	56	3 /16	4.04
05/24/13	7	50	JD	983387	0.4770	0.7023	*	0.7023	608.8	0.0	567.0	0.1	1	1	0.026284	0.001028	511472	0.4961	7.8	0.041	7.7	7.4	11.5			11	3	3.8	0.92	0.72	0	0 /16	0.00	56	6 /16	4.04
05/25/13	9	00	TR	983906	0.5190	0.5647	*	0.5647	608.8	0.0	567.1	0.1	1	0	0.006496	0.001028	553830	0.5372	6.4	0.026	7.8	7.3	11.0			8	12	4.0	0.89	0.70	0	0 /16	0.00	38	11 /16	4.04
05/26/13	8	15	TR	984398	0.4920	0.5117	*	0.5117	608.8	0.0	567.2	0.1	2	1	0.032780	0.001034	516226	0.5007	5.9	0.060	7.9	7.4	11.4			6	6	3.9	0.93	0.72	0	0 /16	0.00	38	15 /16	5.39
05/27/13	9	00	TR	984955	0.5570	0.5085	*	0.5085	608.8	0.0	567.4	0.2	2	1	0.032780	0.001065	589920	0.5722	5.8	0.049	8.0	7.4	11.2	18.0		30	1	4.8	1.01	0.70	0	0 /16	0.00	39	4 /16	2.69
05/28/13	8	00	JD	985370	0.4150	0.5795	*	0.5795	608.8	0.0	567.4	0.0	1	0	0.006496	0.001002	470065	0.4560	5.3	0.035	7.6	7.4	11.3			27	12	3.8	1.00	0.70	0	0 /16	0.00	39	8 /16	5.39
05/29/13	7	50	JD	985685	0.3150	0.7063	*	0.7063	608.9	0.1	567.4	0.0	0	1	0.019788	0.000939	296860	0.2880	7.5	0.042	7.6	7.4	13.3			26	3	2.6	1.07	0.72	0	0 /16	0.00	39	11 /16	4.04
05/30/13	7	50	JD	986081	0.3960	0.6423	*	0.6423	608.9	0.0	567.4	0.0	2	0	0.012992	0.000973	358239	0.3475	7.5	0.038	7.6	7.4	13.0			24	4	3.2	1.09	0.70	0	0 /16	0.00	39	14 /16	4.04
05/31/13	7	30	JD	986736	0.6550	0.3719	*	0.3719	609.1	0.2	567.4	0.0	1	1	0.026284	0.001082	571656	0.5545	9.5	0.061	7.6	7.4	12.1			21	1	5.2	1.13	0.71	0	0 /16	0.00	40	4 /16	8.08
	TOTALS				14.8950			18.597		1.6		1.6			0.655300	0.031361		14.2069										109.5					0.00			129.24
	AVG.				0.4805			0.5999		0.1		0.1			0.021139			0.4583	6.3	0.043	7.7	7.4	12	21.3				3.5	0.92	0.70			0.00			4.17

WT. Of PAC plus WT. Of water

OPERATOR'S SIGNATURE:

AVG. NTU	0.04	AVG.PROD.	0.458286
HIGH NTU	0.12	HIGH PROD.	0.626033
LOW NTU	0.02	LOW PROD.	0.232349

* All or some transverse inflow.

Comb. Ph GPM	0.3091
Comb.Turb. GPD	776.0

NORTH YUBA WATER DISTRICT
FORBESTOWN WATER TREATMENT PLANT
OPERATORS RECORD
SYSTEM NO. 58-006
June 2013

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				RAW WATER				AIR SCOUR BLOWERS						FILTERED WATER				TURBIDITY		PH				CHLORINATION-12.5% SODIUM HYPOCHLORITE											
DATE	TIME HR	MIN	OPER INIT	TO PLANT METER	USAGE MG	TO POND METER		FLOW MG	NO.1 METER	NO.1 USE	NO.2 METER	NO.2 USE	F	B W	BACK WASH MG	TEST METERS flow-MG	METER	PRODUC. MG	RAW	TRT	RAW	TRT	WATER TEMP CENT.	ALK.	INCH	16'ths	LB. USE	APPL. MG/L	TRT. RES. PPM	11% SODA ASH INCH	16'S	LBS.	ALUM POLYMER BLEND NTU 926 INCH	16'S	LBS.
				986736	0.3541	0.3719		0.3719	609.1		567.4						571656								21	1						0.0	40	4	
06/01/13	8	25	MB	987421	0.6850	0.3766	*	0.3766	609.2	0.1	567.4	0.0	1	1	0.026284	0.001102	669899	0.6498	9.3	0.054	7.7	7.4	13.7		17	14	5.2	1.27	0.70	0	0	/16 0.00	40	8	/16 5.39
06/02/13	9	40	JD	987910	0.4890	0.5884	*	0.5884	609.3	0.1	567.4	0.0	2	0	0.012992	0.001004	461508	0.4477	13.9	0.037	7.6	7.4	14.8		15	8	3.9	1.04	0.70	0	0	/16 0.00	40	12	/16 5.39
06/03/13	8	00	JD	988573	0.6630	0.3021	*	0.3021	609.4	0.1	567.4	0.0	2	1	0.032780	0.001076	569448	0.5524	8.4	0.032	7.6	7.4	14.7	17.3	12	5	5.2	1.13	0.70	0	0	/16 0.00	41	0	/16 5.39
06/04/13	8	00	JD	989203	0.6300	0.4812	*	0.4812	609.4	0.0	567.5	0.1	1	0	0.006496	0.001058	712276	0.6909	20.2	0.093	7.5	7.3	15.5		9	5	4.9	0.85	0.72	0	0	/16 0.00	41	4	/16 5.39
06/05/13	7	00	JD	989894	0.6910	0.8738	*	0.8738	609.4	0.0	567.7	0.2	2	2	0.052568	0.001104	728320	0.7065	8.9	0.043	8.2	7.8	20.6		5	13	5.0	0.85	0.69	0	0	/16 0.00	41	12	/16 10.77
06/06/13	8	00	JD	990508	0.6140	0.4735	*	0.4735	609.4	0.0	567.8	0.1	1	0	0.006496	0.001076	594694	0.5650	18.5	0.041	7.6	7.4	15.7		2	13	4.9	1.04	0.70	0	0	/16 0.00	42	0	/16 5.39
06/07/13	8	05	JD	991235	0.7270	0.3030	*	0.3030	609.4	0.0	567.9	0.1	1	1	0.026284	0.001089	764203	0.7260	11.8	0.041	7.5	7.4	16.0		17	7	5.2	0.86	0.70	0	0	/16 0.00	42	5	/16 6.73
06/08/13	7	22	DB	991934	0.6990	0.3115	*	0.3115	609.4	0.0	568.1	0.2	1	1	0.026284	0.001115	776340	0.7375	15.1	0.043	7.5	7.3	15.7		14	6	3.1	0.50	0.71	0	0	/16 0.00	42	9	/16 5.39
06/09/13	7	33	DB	992733	0.7990	0.2375	*	0.2375	609.4	0.0	568.2	0.1	1	1	0.026284	0.001154	856336	0.8135	16.5	0.042	7.6	7.3	15.6		10	12	5.9	0.87	0.71	0	0	/16 0.00	43	1	/16 10.77
06/10/13	8	00	JD	993408	0.6750	0.3759	*	0.3759	609.4	0.0	568.3	0.1	2	0	0.012992	0.001097	722185	0.6861	15.5	0.034	7.7	7.4	15.8	20.2	7	9	5.2	0.91	0.69	0	0	/16 0.00	43	4	/16 4.04
06/11/13	8	00	JD	993839	0.4310	0.6000	*	0.6000	609.5	0.1	568.3	0.0	1	0	0.006496	0.000982	407442	0.3871	13.2	0.043	7.6	7.4	14.3		5	8	3.4	1.05	0.72	0	0	/16 0.00	43	7	/16 4.04
06/12/13	7	50	JD	994356	0.5170	0.5090	*	0.5090	609.6	0.1	568.3	0.0	1	0	0.006496	0.001021	492682	0.4680	13.0	0.036	7.6	7.4	14.1		3	0	4.1	1.05	0.70	0	0	/16 0.00	43	10	/16 4.04
06/13/13	7	45	JD	995056	0.7000	0.3278	*	0.3278	609.7	0.0	568.3	0.0	3	1	0.039276	0.001106	648000	0.6156	13.1	0.038	7.4	7.5	14.3		0	0	4.9	0.96	0.68	0	0	/16 0.00	43	15	/16 6.73
06/14/13	7	55	JD	995638	0.5820	0.4609	*	0.4609	609.9	0.2	568.3	0.0	2	2	0.052568	0.001039	519185	0.4932	18.8	0.048	7.7	7.5	14.8		30	13	4.3	1.05	0.70	0	0	/16 0.00	44	3	/16 5.39
06/15/13	9	30	JD	996330	0.6920	0.4129	*	0.4129	610.0	0.1	568.3	0.0	2	0	0.012992	0.001095	656750	0.6239	15.1	0.044	7.7	7.4	14.1		27	6	3.0	0.58	0.72	0	0	/16 0.00	44	7	/16 5.39
06/16/13	10	00	JD	997054	0.7240	0.3366	*	0.3366	610.2	0.2	568.3	0.0	2	1	0.032780	0.001102	673645	0.6400	12.1	0.040	7.7	7.5	13.9		23	14	5.7	1.07	0.71	0	0	/16 0.00	44	11	/16 5.39
06/17/13	8	00	JD	997726	0.6720	0.2788	*	0.2788	610.3	0.1	568.3	0.0	2	1	0.032780	0.001076	610590	0.5801	25.9	0.049	7.7	7.5	12.9	15.0	20	12	5.6	1.16	0.72	0	0	/16 0.00	45	0	/16 6.73
06/18/13	8	15	JD	998401	0.6750	0.3581	*	0.3581	610.3	0.0	568.5	0.2	2	1	0.032780	0.001086	652085	0.6195	13.5	0.044	7.7	7.4	13.7		17	7	5.4	1.05	0.69	0	0	/16 0.00	45	4	/16 5.39
06/19/13	7	55	JD	999014	0.6130	0.0227	*	0.0227	610.3	0.0	568.6	0.1	2	1	0.032780	0.001058	669742	0.6363	8.2	0.037	8.6	7.9	20.9		14	4	5.2	0.98	0.71	0	0	/16 0.00	45	10	/16 4.04
06/20/13	8	00	JD	999657	0.6430	0.0000		0.0000	610.3	0.0	568.7	0.1	1	0	0.006496	0.001069	744282	0.7071	10.4	0.035	7.7	8.3	14.9		10	7	6.2	1.06	0.70	0	0	/16 0.00	46	3	/16 12.12
06/21/13	7	50	JD	280	0.6230	0.4030	*	0.4030	610.3	0.0	568.8	0.1	1	1	0.026284	0.001060	666984	0.6336	17.4	0.037	7.8	7.6	12.6		7	3	5.3	1.01	0.72	0	0	/16 0.00	46	7	/16 5.39
06/22/13	7	00	KM	911	0.6310	0.3572	*	0.3572	610.3	0.0	569.0	0.2	1	1	0.026284	0.001063	671031	0.6375	9.6	0.038	7.6	7.5	15.2		4	6	4.6	0.87	0.71	0	0	/16 0.00	46	10	/16 4.04
06/23/13	7	30	KM	1548	0.6370	0.4215	*	0.4215	610.3	0.0	569.1	0.1	1	0	0.006496	0.001060	677659	0.6438	21.3	0.041	7.7	7.5	13.1		27	5	4.6	0.86	0.70	0	0	/16 0.00	46	13	/16 4.04
06/24/13	7	45	JD	2108	0.5600	0.4837	*	0.4837	610.3	0.0	569.2	0.1	2	1	0.032780	0.001028	582340	0.5532	11.8	0.035	7.8	7.5	13.1	16.4	24	12	4.2	0.91	0.70	0	0	/16 0.00	47	3	/16 8.08
06/25/13	8	00 MB		2451	0.3430	1.4538	*	1.4538	610.5	0.2	569.2	0.0	0	1	0.019788	0.000947	319821	0.3038	55.5	0.187	7.8	7.4	13.3		23	2	2.7	1.05	0.68	0	0	/16 0.00	47	4	/16 1.35
06/26/13	8	00	JD	2857	0.4060	1.2117	*	1.2117	610.6	0.1	569.2	0.0	2	1	0.032780	0.000958	363323	0.3452	13.6	0.042	7.7	7.6	14.0		20	13	3.8	1.32	0.73	0	0	/16 0.00	47	9	/16 6.73
06/27/13	8	00	JD	3241	0.3840	0.6503	*	0.6503	610.6	0.0	569.2	0.0	1	0	0.006496	0.000961	364128	0.3459	9.1	0.041	7.8	7.4	13.7		19	0	3.0	1.03	0.70	0	0	/16 0.00	47	12	/16 2.69
06/28/13	8	00	JD	3731	0.4900	0.5457	*	0.5457	610.7	0.1	569.2	0.0	1	1	0.026284	0.001006	457900	0.4350	9.7	0.048	7.7	7.4	14.0		16	11	3.8	1.04	0.69	0	0	/16 0.00	47	15	/16 4.04
06/29/13	8	00	TR	4332	0.6010	0.4390	*	0.4390	610.8	0.1	569.2	0.0	2	0	0.012992	0.001052	568346	0.5399	7.9	0.044	7.8	7.4	15.9		13	14	4.6	1.02	0.72	0	0	/16 0.00	48	2	/16 4.04
06/30/13	8	15	TR	4994	0.6620	0.3793	*	0.3793	611.0	0.2	569.2	0.0	2	1	0.032780	0.001067	617950	0.5871	8.7	0.041	7.8	7.3	15.1		10	13	5.0	1.02	0.69	0	0	/16 0.00	48	6	/16 5.39
	TOTALS				18.2580			13.9755		1.8		1.8			0.707868	0.031715		17.3710									138.0					0.00			169.63
	AVG.				0.6086			0.4659		0.1		0.1			0.023596			0.5790	14.9	0.048	7.7	7.5	14.9	17.2			4.6	0.98	0.70			0.00			5.65

WT. Of PAC plus WT. Of water

OPERATOR'S SIGNATURE:

AVG. NTU	0.05	AVG.PROD.	0.579032
HIGH NTU	0.19	HIGH PROD.	0.813519
LOW NTU	0.03	LOW PROD.	0.30383
Comb. Ph GPM	0.3091		
Comb.Turb. GPD	776.0		

* All or some transverse inflow.

NORTH YUBA WATER DISTRICT
FORBESTOWN WATER TREATMENT PLANT
OPERATORS RECORD
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DATE	TIME HR	TIME MIN	OPER INIT	RAW WATER TO PLANT METER	RAW WATER USAGE MG	RAW WATER TO POND METER		FLOW MG	AIR SCOUR BLOWERS NO.1 METER	NO.1 USE	NO.2 METER	NO.2 USE	F	BW	FILTERED WATER BACK WASH MG	TEST METERS flow-MG	METER	PRODUC. MG
				4994	0.3541	0.3793		0.3793	611.0		569.2						617950	
07/01/13	8	15	MB	5789	0.7950	0.2568	*	0.2568	611.1	0.1	569.2	0.0	1	1	0.026284	0.001121	725637	0.7039
07/02/13	7	20	MB	6576	0.7870	0.2110	*	0.2110	611.1	0.0	569.4	0.2	2	1	0.032780	0.001121	841542	0.8163
07/03/13	8	05	JD	7388	0.8120	0.2611	*	0.2611	611.1	0.0	569.6	0.2	2	1	0.032780	0.001132	874645	0.8484
07/04/13	8	00	MB	8189	0.8010	0.2302	*	0.2302	611.1	0.0	569.7	0.1	1	1	0.026284	0.001128	850735	0.8252
07/05/13	8	20	MB	8988	0.7990	0.2502	*	0.2502	611.1	0.0	569.9	0.2	2	1	0.032780	0.001128	840736	0.8155
07/06/13	7	25	MB	9657	0.6690	0.3274	*	0.3274	611.1	0.0	570.1	0.2	2	0	0.012992	0.001073	727519	0.6911
07/07/13	8	25	MB	10419	0.7620	0.3048	*	0.3048	611.1	0.0	570.2	0.1	2	1	0.032780	0.001119	814279	0.7736
07/08/13	7	55	JD	11173	0.7540	0.2710	*	0.2710	611.1	0.0	570.3	0.1	2	1	0.032780	0.001110	793925	0.7542
07/09/13	7	45	JD	11891	0.7180	0.2981	*	0.2981	611.3	0.2	570.3	0.0	2	1	0.032780	0.001102	667167	0.6338
07/10/13	8	05	JD	12681	0.7900	0.2583	*	0.2583	611.5	0.2	570.3	0.0	2	1	0.032780	0.001134	737102	0.7002
07/11/13	7	55	JD	13479	0.7980	0.2313	*	0.2313	611.6	0.1	570.3	0.0	2	1	0.032780	0.001130	744336	0.7071
07/12/13	8	05	JD	14184	0.7050	0.3340	*	0.3340	611.7	0.1	570.3	0.0	2	0	0.012992	0.001093	670320	0.6368
07/13/13	8	05	DB	14905	0.7210	0.2982	*	0.2982	611.9	0.2	570.3	0.0	2	1	0.032780	0.001097	667569	0.6342
07/14/13	8	00	DB	15886	0.9810	0.0512	*	0.0512	612.1	0.2	570.3	0.0	2	1	0.032780	0.001219	920588	0.8746
07/15/13	8	00	JD	16741	0.8550	0.1894	*	0.1894	612.3	0.2	570.3	0.0	3	1	0.039276	0.001156	789355	0.7499
07/16/13	8	00	JD	17494	0.7530	0.2723	*	0.2723	612.3	0.0	570.5	0.2	3	1	0.039276	0.001119	793432	0.7538
07/17/13	8	00	JD	18180	0.6860	0.3444	*	0.3444	612.3	0.0	570.7	0.2	2	1	0.032780	0.001086	724454	0.6882
07/18/13	7	40	JD	18888	0.7080	0.3153	*	0.3153	612.3	0.0	570.8	0.1	2	1	0.032780	0.001095	756035	0.7182
07/19/13	8	00	JD	19703	0.8150	0.2255	*	0.2255	612.3	0.0	570.9	0.1	2	0	0.012992	0.001140	875300	0.8315
07/20/13	9	20	JD	20499	0.7960	0.2973	*	0.2973	612.3	0.0	571.0	0.1	2	1	0.032780	0.001130	850835	0.8083
07/21/13	9	55	JD	21311	0.8120	0.2441	*	0.2441	612.3	0.0	571.2	0.2	3	1	0.039276	0.001136	853230	0.8106
07/22/13	7	55	JD	22232	0.9210	0.0336	*	0.0336	612.3	0.0	571.4	0.2	2	1	0.032780	0.001184	983820	0.9346
07/23/13	7	50	MB	22827	0.5950	0.4351	*	0.4351	612.4	0.1	571.4	0.0	1	1	0.026284	0.001050	554019	0.5263
07/24/13	8	25	MB	23565	0.7380	0.3212	*	0.3212	612.4	0.0	571.4	0.0	1	1	0.026284	0.001102	681852	0.6478
07/25/13	8	00	MB	24285	0.7200	0.3057	*	0.3057	612.7	0.3	571.4	0.0	1	1	0.026284	0.001102	691440	0.6569
07/26/13	10	00	JD	25085	0.8000	0.3184	*	0.3184	612.9	0.2	571.4	0.0	2	0	0.012992	0.001128	737385	0.7005
07/27/13	9	30	JD	25850	0.7650	0.5687	*	0.5687	613.0	0.1	571.4	0.0	2	1	0.032780	0.001114	712695	0.6771
07/28/13	10	00	JD	26652	0.8020	0.2546	*	0.2546	613.2	0.2	571.4	0.0	2	1	0.032780	0.001132	751825	0.7142
07/29/13	8	00	JD	27557	0.9050	0.0370	*	0.0370	613.4	0.2	571.4	0.0	3	1	0.039276	0.001184	842195	0.8001
07/30/13	8	20	JD	28225	0.6680	0.3769	*	0.3769	613.4	0.0	571.5	0.1	2	1	0.032780	0.001078	697911	0.6630
07/31/13	8	00	JD	28911	0.6860	0.3340	*	0.3340	613.4	0.0	571.7	0.2	2	1	0.032780	0.001088	730343	0.6938
	TOTALS				23.9170			8.4571		2.4		2.5			0.930532	0.034733		22.7898
	AVG.				0.7715			0.2728		0.1		0.1			0.030017			0.7352

DATE	TURBIDITY RAW	TURBIDITY TRT	PH RAW	PH TRT	WATER TEMP CENT.	ALK.	CHLORINATION-12.5% SODIUM HYPOCHLORITE INCH	16'ths	LB. USE	APPL. MG/L	TRT. RES. PPM	11% SODA ASH INCH	16'S	LBS.	ALUM POLYMER BLEND NTU 926 INCH	16'S	LBS.
							10	13				0	0	0.0	48	6	
07/01/13	6.3	0.074	8.0	7.4	16.5	16.8	7	4	5.2	1.27	0.77	0	0 /16	0.00	48	10 /16	5.39
07/02/13	7.7	0.067	7.8	7.4	17.7		32	13	6.2	0.91	0.73	0	0 /16	0.00	48	15 /16	6.73
07/03/13	9.0	0.047	7.7	7.4	14.5		28	15	6.3	0.90	0.72	0	0 /16	0.00	49	5 /16	8.08
07/04/13	10.4	0.080	7.9	7.4	17.0		25	2	6.2	0.91	0.66	0	0 /16	0.00	49	9 /16	5.39
07/05/13	16.5	0.041	7.6	7.4	17.5		21	7	1.9	0.28	0.74	0	0 /16	0.00	49	15 /16	8.08
07/06/13	7.9	0.042	7.9	7.4	16.7		18	4	5.2	0.91	0.70	0	0 /16	0.00	50	4 /16	6.73
07/07/13	15.7	0.075	7.8	7.4	15.3		14	9	6.0	0.94	0.76	0	0 /16	0.00	50	8 /16	5.39
07/08/13	9.1	0.053	7.7	7.4	16.8	17.8	11	0	3.1	0.49	0.72	0	0 /16	0.00	50	14 /16	8.08
07/09/13	6.9	0.042	7.7	7.4	16.5		7	7	5.8	1.10	0.71	0	0 /16	0.00	51	3 /16	6.73
07/10/13	12.5	0.048	7.8	7.4	15.7		3	10	6.2	1.07	0.72	0	0 /16	0.00	51	8 /16	6.73
07/11/13	7.9	0.040	7.6	7.4	16.1		10	1	6.3	1.07	0.71	0	0 /16	0.00	51	15 /16	9.42
07/12/13	10.9	0.036	7.4	7.4	16.2		6	10	5.6	1.06	0.71	0	0 /16	0.00	52	4 /16	6.73
07/13/13	18.2	0.038	7.8	7.4	14.2		30	15	5.8	1.10	0.73	0	0 /16	0.00	52	9 /16	6.73
07/14/13	17.4	0.047	7.8	7.4	14.8		26	0	8.1	1.11	0.72	0	0 /16	0.00	53	2 /16	12.12
07/15/13	10.6	0.054	7.8	7.5	15.4	18.0	21	12	6.5	1.04	0.70	0	0 /16	0.00	53	7 /16	6.73
07/16/13	11.8	0.041	7.6	7.5	16.7		17	15	6.2	0.99	0.70	0	0 /16	0.00	53	13 /16	8.08
07/17/13	16.8	0.060	7.8	7.5	14.0		19	11	5.6	0.98	0.71	0	0 /16	0.00	54	2 /16	6.73
07/18/13	10.9	0.069	7.8	7.5	13.7		16	1	5.9	0.99	0.70	0	0 /16	0.00	54	6 /16	5.39
07/19/13	12.0	0.056	7.7	7.6	15.3		11	13	7.0	1.00	0.72	0	0 /16	0.00	54	11 /16	4.04
07/20/13	12.5	0.045	7.7	7.6	15.3		7	13	6.5	0.97	0.71	0	0 /16	0.00	55	0 /16	6.73
07/21/13	11.6	0.049	7.7	7.6	15.2		3	7	7.2	1.06	0.72	0	0 /16	0.00	55	4 /16	5.39
07/22/13	13.4	0.048	7.9	7.6	15.9	16.5	31	0	8.3	1.06	0.69	0	0 /16	0.00	55	10 /16	5.39
07/23/13	40.6	0.045	8.1	7.6	16.4		28	8	4.1	0.93	0.71	0	0 /16	0.00	55	11 /16	5.39
07/24/13	36.3	0.051	8.3	7.6	16.0		25	4	5.3	0.99	0.70	0	0 /16	0.00	38	4 /16	6.73
07/25/13	14.8	0.040	7.8	7.6	16.3		22	0	5.3	0.97	0.71	0	0 /16	0.00	38	8 /16	5.39
07/26/13	18.6	0.039	7.8	7.6	15.7		18	8	5.7	0.98	0.70	0	0 /16	0.00	38	12 /16	5.39
07/27/13	12.2	0.042	7.8	7.6	15.8		15	1	5.6	1.00	0.72	0	0 /16	0.00	39	2 /16	5.39
07/28/13	19.5	0.046	7.8	7.6	15.3		11	6	6.0	1.01	0.71	0	0 /16	0.00	39	7 /16	6.73
07/29/13	14.2	0.044	7.8	7.7	14.6	17.2	7	1	7.1	1.06	0.70	0	0 /16	0.00	39	14 /16	9.42
07/30/13	12.6	0.038	7.8	7.7	14.5		3	13	5.3	0.96	0.69	0	0 /16	0.00	40	2 /16	5.39
07/31/13	12.1	0.044	7.7	7.7	14.8		33	2	5.7	0.99	0.70	0	0 /16	0.00	40	7 /16	4.04
TOTALS									181.6					0.00			204.65
AVG.	14.1	0.050	7.8	7.5	16	17.3			5.9	0.97	0.71			0.00			6.60

WT. Of PAC plus WT. Of water

OPERATOR'S SIGNATURE:

AVG. NTU	0.05	AVG.PROD.	0.735154
HIGH NTU	0.08	HIGH PROD.	0.934629
LOW NTU	0.04	LOW PROD.	0.526318

* All or some transverse inflow.

Comb. Ph GPM 0.3091
Comb.Turb. GPD 776.0

NORTH YUBA WATER DISTRICT
FORBESTOWN WATER TREATMENT PLANT
OPERATORS RECORD
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				RAW WATER				AIR SCOUR BLOWERS						FILTERED WATER				TURBIDITY		PH				CHLORINATION-12.5% SODIUM HYPOCHLORITE											
DATE	TIME HR	TIME MIN	OPER INIT	TO PLANT METER	USAGE MG	TO POND METER		FLOW MG	NO.1 METER	NO.1 USE	NO.2 METER	NO.2 USE	F	B W	BACK WASH MG	TEST METERS flow-MG	METER	PRODUC. MG	RAW	TRT	RAW	TRT	WATER TEMP CENT.	ALK.	INCH	16'ths	LB. USE	APPL. MG/L	TRT. RES. PPM	11% SODA ASH INCH	11% SODA ASH 16'S	11% SODA ASH LBS.	ALUM POLYMER BLEND NTU 926 INCH	ALUM POLYMER BLEND NTU 926 16'S	ALUM POLYMER BLEND NTU 926 LBS.
				28911	0.3541	0.3340	*	0.3340	613.4		571.7						730343								33	2				0	0	0.0	40	7	
08/01/13	8	10	JD	29619	0.7080	0.3334	*	0.3334	613.4	0.0	571.8	0.1	2	0	0.012992	0.001093	765062	0.7421	12.0	0.031	7.8	7.7	14.5		29	8	5.2	1.27	0.70	0	0 /16	0.00	40	11 /16	5.39
08/02/13	8	00	TR	30335	0.7160	0.3134	*	0.3134	613.4	0.0	571.9	0.1	2	1	0.032780	0.001104	761902	0.7390	11.8	0.036	8.0	7.7	14.1		25	14	5.9	0.96	0.69	0	0 /16	0.00	41	1 /16	8.08
08/03/13	8	30	TR	31053	0.7180	0.3258	*	0.3258	613.4	0.0	572.1	0.2	3	1	0.039276	0.001104	757190	0.7345	10.8	0.049	8.1	7.7	13.8		23	0	4.7	0.77	0.70	0	0 /16	0.00	41	5 /16	5.39
08/04/13	9	30	TR	31753	0.7000	0.3710	*	0.3710	613.4	0.0	572.3	0.2	2	1	0.032780	0.001093	746820	0.7244	10.6	0.062	8.1	7.7	13.7		20	1	4.8	0.80	0.70	0	0 /16	0.00	41	10 /16	6.73
08/05/13	8	15	TR	32509	0.7560	0.2330	*	0.2330	613.4	0.0	572.4	0.1	2	0	0.012992	0.001117	809717	0.7854	10.0	0.056	8.1	7.7	13.9	16.9	16	13	5.3	0.81	0.71	0	0 /16	0.00	41	15 /16	6.73
08/06/13	8	00	JD	33210	0.7010	0.7123	*	0.7123	613.5	0.1	572.4	0.0	2	1	0.032780	0.001095	654840	0.6221	10.4	0.034	7.9	7.7	14.1		13	14	4.8	0.93	0.70	0	0 /16	0.00	42	3 /16	5.39
08/07/13	8	15	JD	33959	0.7490	0.2969	*	0.2969	613.7	0.2	572.4	0.0	3	1	0.039276	0.001115	696345	0.6615	8.0	0.034	7.9	7.7	14.2		10	10	5.3	0.96	0.71	0	0 /16	0.00	42	8 /16	6.73
08/08/13	8	25	JD	34653	0.6940	0.3390	*	0.3390	613.9	0.2	572.4	0.0	2	1	0.032780	0.001095	651745	0.6192	7.9	0.052	7.9	7.7	13.6		7	9	5.0	0.97	0.70	0	0 /16	0.00	42	12 /16	5.39
08/09/13	8	00	JD	35368	0.7150	0.3010	*	0.3010	614.0	0.1	572.4	0.0	2	0	0.012992	0.001102	676695	0.6429	10.0	0.032	7.9	7.7	13.3		4	4	5.4	1.01	0.70	0	0 /16	0.00	43	1 /16	6.73
08/10/13	7	00	KM	36032	0.6640	0.3193	*	0.3193	614.2	0.2	572.4	0.0	1	1	0.026284	0.001084	624587	0.5934	12.9	0.032	7.9	7.7	13.5		30	7	5.2	1.05	0.70	0	0 /16	0.00	43	6 /16	6.73
08/11/13	7	30	KM	36754	0.7220	0.0562	*	0.0562	614.3	0.1	572.4	0.0	1	0	0.006496	0.001112	676705	0.6429	12.7	0.038	8.3	7.7	13.6		26	11	6.1	1.15	0.70	0	0 /16	0.00	43	9 /16	4.04
08/12/13	8	15	JD	37531	0.7770	0.0204	*	0.0204	614.4	0.1	572.4	0.0	2	0	0.012992	0.001127	722122	0.6860	8.4	0.029	8.0	7.7	13.4	15.3	22	8	6.9	1.20	0.70	0	0 /16	0.00	43	15 /16	8.08
08/13/13	7	55	JD	38093	0.5620	0.4497	*	0.4497	614.4	0.0	572.4	0.0	1	0	0.006496	0.001034	611948	0.5814	10.6	0.039	7.9	7.7	13.9		19	6	5.1	1.06	0.71	0	0 /16	0.00	44	2 /16	4.04
08/14/13	8	00	JD	38748	0.6550	0.3854	*	0.3854	614.4	0.0	572.7	0.3	3	2	0.059064	0.001082	682014	0.6479	10.8	0.044	7.9	7.7	13.5		15	12	5.9	0.89	0.69	0	0 /16	0.00	44	6 /16	5.39
08/15/13	8	40	JD	39283	0.5350	0.5230	*	0.5230	614.4	0.0	572.8	0.1	2	0	0.012992	0.001017	576130	0.5473	10.8	0.043	7.9	7.7	13.6		12	11	4.8	0.94	0.68	0	0 /16	0.00	44	9 /16	4.04
08/16/13	7	50	JD	39996	0.7130	0.2836	*	0.2836	614.4	0.0	572.9	0.1	2	1	0.032780	0.001102	760284	0.7223	10.3	0.042	7.8	7.7	13.6		8	12	6.4	1.07	0.70	0	0 /16	0.00	44	14 /16	6.73
08/17/13	7	45	DB	40665	0.6690	0.3632	*	0.3632	614.4	0.0	573.1	0.2	2	1	0.032780	0.001078	707600	0.6722	18.0	0.046	7.8	7.7	14.0		31	14	5.6	1.00	0.70	0	0 /16	0.00	45	2 /16	5.39
08/18/13	8	00	DB	41391	0.7260	0.2990	*	0.2990	614.4	0.0	573.2	0.1	2	0	0.012992	0.001104	785945	0.7466	13.5	0.040	7.8	7.7	14.2		28	0	6.3	1.02	0.70	0	0 /16	0.00	45	6 /16	5.39
08/19/13	8	25	JD	42117	0.7260	0.3384	*	0.3384	614.4	0.0	573.3	0.1	2	1	0.032780	0.001108	778669	0.7397	9.8	0.067	7.9	7.7	15.0	16.1	24	4	6.1	1.00	0.70	0	0 /16	0.00	45	12 /16	4.04
08/20/13	7	55	JD	42789	0.6720	0.3365	*	0.3365	614.6	0.2	573.3	0.0	3	1	0.039276	0.001089	622041	0.5909	11.8	0.034	7.9	7.7	14.7		20	12	5.7	1.16	0.69	0	0 /16	0.00	46	0 /16	5.39
08/21/13	8	10	JD	43524	0.7350	0.3065	*	0.3065	614.7	0.1	573.3	0.0	2	1	0.032780	0.001114	694041	0.6593	8.4	0.031	7.9	7.7	14.7		16	14	6.3	1.15	0.70	0	0 /16	0.00	46	4 /16	5.39
08/22/13	7	50	JD	44032	0.5080	0.5094	*	0.5094	614.8	0.1	573.3	0.0	1	0	0.006496	0.001002	482043	0.4579	10.5	0.037	7.8	7.7	14.2		14	3	4.4	1.15	0.71	0	0 /16	0.00	46	8 /16	5.39
08/23/13	8	10	JD	44717	0.6850	0.3682	*	0.3682	614.9	0.1	573.3	0.0	2	1	0.032780	0.001086	645295	0.6130	9.4	0.031	7.8	7.8	13.5		10	8	6.0	1.18	0.70	0	0 /16	0.00	46	12 /16	5.39
08/24/13	9	10	JD	45388	0.6710	0.4067	*	0.4067	615.1	0.2	573.3	0.0	2	1	0.032780	0.001082	625068	0.5938	11.8	0.046	7.8	7.7	13.8		7	11	4.6	0.93	0.72	0	0 /16	0.00	47	0 /16	5.39
08/25/13	10	05	JD	45951	0.5630	0.5068	*	0.5068	615.2	0.1	573.3	0.0	2	0	0.012992	0.001036	533768	0.5071	12.8	0.040	8.0	7.8	13.5		4	7	5.3	1.26	0.70	0	0 /16	0.00	47	4 /16	5.39
08/26/13	8	10	MB	46565	0.6140	0.3451	*	0.3451	615.3	0.1	573.3	0.0	1	1	0.026284	0.001054	562909	0.5348	14.3	0.057	8.2	7.6	13.6	15.7	0	0	7.3	1.63	0.65	0	0 /16	0.00	47	7 /16	4.04
08/27/13	7	40	MB	47114	0.5490	0.4463	*	0.4463	615.3	0.4	573.5	0.2	1	1	0.026284	0.001032	599054	0.5691	23.8	0.045	8.2	7.7	13.6		30	7	7.6	1.60	0.66	0	0 /16	0.00	47	10 /16	2.69
08/28/13	8	00	DB	47727	0.6130	0.4287	*	0.4287	615.3	0.0	573.6	0.1	2	1	0.032780	0.001060	653974	0.6213	16.3	0.044	7.9	7.7	14.1		25	10	7.9	1.52	0.69	0	0 /16	0.00	47	13 /16	4.04
08/29/13	8	05	JD	48339	0.6120	0.4385	*	0.4385	615.3	0.0	573.7	0.1	2	0	0.012992	0.001054	657459	0.6246	11.5	0.043	7.9	7.8	13.9		20	12	8.0	1.53	0.70	0	0 /16	0.00	48	3 /16	8.08
08/30/13	8	20	JD	48934	0.5950	0.4500	*	0.4500	615.3	0.0	573.9	0.2	2	1	0.032780	0.001050	631574	0.6000	10.1	0.041	7.9	7.8	13.6		16	8	7.0	1.39	0.69	0	0 /16	0.00	48	6 /16	4.04
08/31/13	8	15	KM	49539	0.6050	0.4161	*	0.4161	615.3	0.0	573.9	0.0	2	1	0.032780	0.001050	666806	0.6335	8.8	0.045	7.4	7.8	13.3		13	11	4.6	0.87	0.65	0	0 /16	0.00	48	9 /16	4.04
TOTALS					20.6280			11.2228		2.3		2.2			0.805308	0.033477		19.8561									179.8					0.00			169.63
AVG.					0.6654			0.3620		0.1		0.1			0.025978			0.6405	11.6	0.042	7.9	7.7	13.9	16.0			5.8	1.10	0.70			0.00			5.47

OPERATOR'S SIGNATURE:

* All or some transverse inflow.

AVG. NTU	0.04	AVG.PROD.	0.640521
HIGH NTU	0.07	HIGH PROD.	0.785425
LOW NTU	0.03	LOW PROD.	0.457941

WT. Of PAC plus WT. Of water

Comb. Ph GPM	0.3091
Comb.Turb. GPD	776.0

NORTH YUBA WATER DISTRICT
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				RAW WATER				AIR SCOUR BLOWERS						FILTERED WATER				TURBIDITY		PH				CHLORINATION-12.5% SODIUM HYPOCHLORITE											
														BACK	TEST							WATER				LB.	APPL.	TRT.	11% SODA ASH			ALUM POLYMER BLEND		
	TIME		OPER	TO PLANT	USAGE	TO POND	FLOW	NO.1	NO.1	NO.2	NO.2		B	WASH	METERS	METER	PRODUC.	RAW	TRT	RAW	TRT	TEMP	ALK.				RES.			NTU 926		
DATE	HR	MIN	INIT	METER	MG	METER	MG	METER	USE	METER	USE	F	W	MG	flow-MG		MG					CENT.		INCH	16'ths	USE	MG/L	PPM	INCH	16'S	LBS.	INCH	16'S	LBS.
				49539	0.3541	0.4161	0.4161	615.3		573.9						666806								13	11				0	0	0.0	48	9	
09/01/13	5	15	KM	50129	0.5900	0.2785	0.2785	615.3	0.0	574.1	0.2	1	1	0.026284	0.001045	627011	0.6082	10.1	0.042	7.5	7.7	14.2		8	8	5.2	1.27	0.70	0	0 /16	0.00	48	13 /16	5.39
09/02/13	7	30	KM	50789	0.6600	0.5040	0.5040	615.3	0.0	574.2	0.1	2	1	0.032780	0.001078	706844	0.6856	11.9	0.049	7.6	7.7	14.0	15.6	24	10	5.7	1.00	0.69	0	0 /16	0.00	49	1 /16	5.39
09/03/13	8	15	JD	51378	0.5890	0.4978	0.4978	615.3	0.0	574.3	0.1	2	0	0.012992	0.001049	636741	0.6176	7.7	0.036	7.8	7.8	14.1		19	12	8.0	1.55	0.70	0	0 /16	0.00	49	5 /16	5.39
09/04/13	7	45	JD	51866	0.4880	0.5057	0.5057	615.4	0.1	574.3	0.0	1	0	0.006496	0.001006	467598	0.4536	7.8	0.034	7.7	7.8	14.0		15	11	6.7	1.76	0.70	0	0 /16	0.00	49	7 /16	2.69
09/05/13	8	00	JD	52325	0.4590	0.5898	0.5898	615.5	0.1	574.3	0.0	2	1	0.032780	0.000991	417599	0.4051	9.9	0.042	7.9	7.7	14.0		12	11	2.9	0.86	0.72	0	0 /16	0.00	49	11 /16	5.39
09/06/13	8	15	JD	52881	0.5560	0.4861	0.4861	615.7	0.2	574.3	0.0	2	1	0.032780	0.001034	518497	0.4926	10.3	0.040	7.9	7.8	13.5		10	4	4.0	0.97	0.70	0	0 /16	0.00	49	14 /16	4.04
09/07/13	9	00	TR	53452	0.5710	0.4995	0.4995	615.8	0.1	574.3	0.0	2	1	0.032780	0.001045	535790	0.5090	9.9	0.040	7.9	7.8	14.2		23	2	4.2	0.99	0.70	0	0 /16	0.00	50	2 /16	5.39
09/08/13	8	45	TR	54053	0.6010	0.4144	0.4144	615.9	0.1	574.3	0.0	2	0	0.012992	0.001052	569230	0.5408	9.7	0.039	7.9	7.8	14.0		19	1	3.1	0.69	0.72	0	0 /16	0.00	50	5 /16	4.04
09/09/13	8	10	JD	54670	0.6170	0.3914	0.3914	616.0	0.1	574.3	0.0	1	1	0.026284	0.001056	580316	0.5513	9.0	0.042	7.8	7.8	14.8	18.0	16	1	4.9	1.07	0.70	0	0 /16	0.00	50	8 /16	4.04
09/10/13	8	00	MB	55270	0.6000	0.4343	0.4343	616.0	0.0	574.4	0.1	1	1	0.026284	0.001047	648131	0.6157	14.2	0.049	8.1	7.8	15.0		11	4	7.9	1.53	0.63	0	0 /16	0.00	50	11 /16	4.04
09/11/13	8	00	JD	55872	0.6020	0.4223	0.4223	616.0	0.0	574.7	0.3	3	2	0.059064	0.001052	624455	0.5932	9.4	0.041	7.8	7.8	14.3		8	4	4.9	0.99	0.69	0	0 /16	0.00	50	15 /16	5.39
09/12/13	8	05	JD	56482	0.6100	0.4268	0.4268	616.0	0.0	574.8	0.1	2	0	0.012992	0.001052	655798	0.6230	7.7	0.041	7.8	7.8	14.9		3	10	7.6	1.46	0.70	0	0 /16	0.00	51	3 /16	5.39
09/13/13	7	50	MB	57035	0.5530	0.4645	0.4645	616.0	0.0	574.9	0.1	1	1	0.026284	0.001034	590183	0.5607	7.9	0.044	8.0	7.8	16.7		33	10	4.9	1.05	0.75	0	0 /16	0.00	51	6 /16	4.04
09/14/13	8	08	MB	57570	0.5350	0.5082	0.5082	616.0	0.0	575.0	0.1	2	0	0.012992	0.001017	579438	0.5505	19.8	0.044	7.9	7.8	16.3		30	14	4.5	0.98	0.74	0	0 /16	0.00	51	9 /16	4.04
09/15/13	8	10	MB	58177	0.6070	0.4238	0.4238	616.0	0.0	575.1	0.1	1	1	0.026284	0.001052	651451	0.6189	6.2	0.046	8.0	7.8	16.0		28	0	3.0	0.58	0.76	0	0 /16	0.00	51	12 /16	4.04
09/16/13	8	00	MB	58853	0.6760	0.3582	0.3582	616.0	0.0	575.3	0.2	1	1	0.026284	0.001080	710792	0.6753	6.0	0.044	8.2	7.8	14.9	18.7	24	6	5.9	1.05	0.74	0	0 /16	0.00	52	0 /16	5.39
09/17/13	8	05	JD	59338	0.4850	0.5543	0.5543	616.2	0.2	575.3	0.0	2	1	0.032780	0.000993	445770	0.4235	7.4	0.054	7.9	7.8	15.1		21	12	5.6	1.59	0.70	0	0 /16	0.00	52	4 /16	5.39
09/18/13	8	00	JD	59986	0.6480	0.3798	0.3798	616.3	0.1	575.3	0.0	2	1	0.032780	0.001065	612770	0.5821	4.9	0.058	7.6	7.9	15.2		17	10	6.8	1.39	0.69	0	0 /16	0.00	52	7 /16	4.04
09/19/13	8	20	JD	60483	0.4970	0.5552	0.5552	616.4	0.1	575.3	0.0	1	0	0.006496	0.000995	475767	0.4520	4.0	0.036	7.6	7.9	15.6		14	5	5.4	1.44	0.70	0	0 /16	0.00	52	9 /16	4.04
09/20/13	8	05	JD	60940	0.4570	0.5819	0.5819	616.4	0.0	575.3	0.0	1	0	0.006496	0.000969	430430	0.4089	7.3	0.039	7.8	7.8	15.0		11	4	5.0	1.47	0.71	0	0 /16	0.00	52	12 /16	4.04
09/21/13	9	05	JD	61580	0.6400	0.4315	0.4315	616.6	0.2	575.3	0.0	1	0	0.006496	0.001078	599905	0.5699	8.1	0.039	7.9	7.8	15.5		8	5	4.8	1.01	0.69	0	0 /16	0.00	53	0 /16	5.39
09/22/13	8	00	DB	61805	0.2250	0.8975	0.8975	616.6	0.0	575.3	0.0	1	0	0.006496	0.000878	211833	0.2012	3.2	0.278	7.8	7.8	18.2		7	0	2.1	1.28	0.71	0	0 /16	0.00	53	4 /16	5.39
09/23/13	8	00	JD	62266	0.4610	1.0805	1.0805	616.7	0.1	575.3	0.0	1	1	0.026284	0.000986	427093	0.4057	3.1	0.036	7.9	7.9	17.8	17.9	4	12	3.7	1.09	0.70	0	0 /16	0.00	53	6 /16	2.69
09/24/13	8	00	MB	62576	0.3100	0.7314	0.7314	616.7	0.0	575.4	0.1	1	1	0.026284	0.000937	334289	0.3176	9.2	0.036	7.8	7.8	15.5		3	12	1.6	0.62	0.77	0	0 /16	0.00	53	7 /16	1.35
09/25/13	8	05	JD	62945	0.3690	0.5549	0.5549	616.7	0.0	575.5	0.1	2	0	0.012992	0.000956	391788	0.3722	4.7	0.031	7.7	7.8	15.3		34	7	2.0	0.64	0.70	0	0 /16	0.00	53	9 /16	2.69
09/26/13	8	45	MB	63213	0.2680	0.6616	0.6616	616.7	0.0	575.5	0.0	1	0	0.006496	0.000904	290147	0.2756	5.8	0.033	7.8	7.7	13.9		33	1	2.3	0.98	0.78	0	0 /16	0.00	53	11 /16	2.69
09/27/13	8	20	JD	63714	0.5010	0.4502	0.4502	616.7	0.0	575.6	0.1	2	1	0.032780	0.001025	507795	0.4824	5.6	0.032	7.9	7.8	14.3		30	12	3.8	0.94	0.69	0	0 /16	0.00	53	15 /16	2.69
09/28/13	7	00	KM	64030	0.3160	0.5715	0.5715	616.7	0.0	575.7	0.1	2	1	0.032780	0.000930	342210	0.3251	9.2	0.032	7.8	7.8	16.6		29	7	2.1	0.79	0.70	0	0 /16	0.00	54	2 /16	4.04
09/29/13	7	00	KM	64419	0.3890	0.5486	0.5486	616.7	0.0	575.8	0.1	2	1	0.032780	0.000965	410708	0.3902	12.3	0.034	7.8	7.8	15.5		27	15	2.5	0.75	0.69	0	0 /16	0.00	54	5 /16	4.04
09/30/13	8	05	JD	64759	0.3400	0.6329	0.6329	616.7	0.0	575.8	0.0	1	0	0.006496	0.000937	354609	0.3369	7.4	0.038	7.9	7.8	15.8	16.8	26	9	2.3	0.80	0.72	0	0 /16	0.00	54	6 /16	1.35
	TOTALS				15.2200		15.8371		1.4		1.9			0.674788	0.030309		14.6444									133.3					0.00			123.86
	AVG.				0.5073		0.5279		0.0		0.1			0.022493			0.4881	8.3	0.048	7.8	7.8	15	17.4			4.4	1.09	0.71			0.00			4.13

OPERATOR'S SIGNATURE:

* All or some transverse inflow.

AVG. NTU	0.05	AVG.PROD.	0.488145	WT. Of PAC plus WT. Of water
HIGH NTU	0.28	HIGH PROD.	0.685639	
LOW NTU	0.03	LOW PROD.	0.201241	
Comb. Ph GPM	0.3091			
Comb.Turb. GPD	776.0			

NORTH YUBA WATER DISTRICT
FORBESTOWN WATER TREATMENT PLANT
OPERATORS RECORD
SYSTEM NO. 58-006
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				RAW WATER				AIR SCOUR BLOWERS						FILTERED WATER				TURBIDITY		PH				CHLORINATION-12.5% SODIUM HYPOCHLORITE											
	TIME		OPER	TO PLANT	USAGE	TO POND	FLOW	NO.1	NO.1	NO.2	NO.2		B	BACK WASH	TEST METERS	METER	PRODUC.	RAW	TRT	RAW	TRT	WATER TEMP	ALK.		LB.	APPL.	TRT. RES.	11% SODA ASH			ALUM POLYMER BLEND NTU 926		
DATE	HR	MIN	INIT	METER	MG	METER	MG	METER	USE	METER	USE	F	W	MG	flow-MG		MG					CENT.		INCH	16'ths	USE	MG/L	PPM	INCH	16'S	LBS.	INCH	16'S	LBS.
				64759	0.3541	0.6329	0.6329	616.7		575.8						354609								26	9				0	0	0.0	54	5	
10/01/13	7	45	MB	65092	0.3330	0.9488	0.9488	616.8	0.1	575.8	0.0	1	0	0.006496	0.000956	320738	0.3111	7.5	0.039	7.9	7.8	15.9		25	4	2.1	0.83	0.74	0	0 /16	0.00	54	6 /16	1.35
10/02/13	7	35	JD	65563	0.4710	0.8600	0.8600	617.0	0.2	575.8	0.0	2	1	0.032780	0.001000	412705	0.4003	6.7	0.031	7.9	7.8	15.0		23	8	2.9	0.86	0.70	0	0 /16	0.00	36	12 /16	2.69
10/03/13	8	45	MB	65976	0.4130	1.5049	1.5049	617.1	0.1	575.8	0.0	0	1	0.019788	0.000976	390017	0.3783	4.9	0.047	7.9	7.8	14.1		21	13	2.8	0.88	0.74	0	0 /16	0.00	36	14 /16	2.69
10/04/13	8	05	JD	66390	0.4140	1.5518	1.5518	617.1	0.0	575.8	0.0	1	0	0.006496	0.000978	396469	0.3846	5.4	0.030	7.8	7.8	14.8		20	0	3.0	0.93	0.70	0	0 /16	0.00	37	0 /16	2.69
10/05/13	9	00	JD	66757	0.3670	1.6120	1.6120	617.3	0.2	575.8	0.0	2	1	0.032780	0.000950	329890	0.3200	5.8	0.054	7.9	7.7	13.8		17	10	3.9	1.46	0.72	0	0 /16	0.00	37	3 /16	4.04
10/06/13	9	30	JD	67306	0.5490	1.3718	1.3718	617.3	0.0	575.8	0.0	1	0	0.006496	0.001030	518015	0.4921	6.6	0.033	7.9	7.7	14.1		13	11	6.4	1.57	0.70	0	0 /16	0.00	37	6 /16	4.04
10/07/13	8	15	JD	67822	0.5160	1.2484	1.2484	617.5	0.2	575.8	0.0	2	1	0.032780	0.001028	475252	0.4515	4.1	0.041	7.8	7.7	13.8	16.6	9	15	6.1	1.63	0.69	0	0 /16	0.00	37	9 /16	4.04
10/08/13	8	25	JD	68091	0.2690	1.3767	1.3767	617.5	0.0	575.9	0.1	0	1	0.019788	0.000908	275283	0.2615	7.1	0.042	7.9	7.7	13.5		7	14	3.4	1.55	0.72	0	0 /16	0.00	37	11 /16	2.69
10/09/13	8	15	MB	68557	0.4660	0.8236	0.8236	617.5	0.0	575.9	0.0	2	0	0.012992	0.001006	508471	0.4830	10.8	0.033	8.1	7.7	12.9		4	6	5.7	1.42	0.70	0	0 /16	0.00	37	13 /16	2.69
10/10/13	8	15	JD	68970	0.4130	0.8720	0.8720	617.5	0.0	576.1	0.2	1	1	0.026284	0.000980	436261	0.4144	4.7	0.036	7.7	7.7	13.7		31	5	3.5	1.01	0.70	0	0 /16	0.00	38	0 /16	4.04
10/11/13	8	05	JD	69259	0.2890	0.7479	0.7479	617.5	0.0	576.1	0.0	1	0	0.006496	0.000913	303530	0.2884	7.6	0.033	7.9	7.7	12.9		29	0	3.8	1.57	0.70	0	0 /16	0.00	38	2 /16	2.69
10/12/13	9	00	TR	69820	0.5610	0.3981	0.3981	617.5	0.0	576.2	0.1	2	1	0.032780	0.001056	594650	0.5649	3.9	0.046	7.9	7.6	12.7		25	14	5.1	1.09	0.69	0	0 /16	0.00	38	5 /16	4.04
10/13/13	9	00	TR	70120	0.3000	0.6398	0.6398	617.5	0.0	576.3	0.1	1	0	0.006496	0.000921	321770	0.3057	3.6	0.039	7.9	7.6	12.8		24	3	2.8	1.08	0.71	0	0 /16	0.00	38	7 /16	2.69
10/14/13	7	55	JD	70575	0.4550	0.4362	0.4362	617.5	0.0	576.3	0.0	1	0	0.006496	0.000997	492341	0.4677	6.9	0.031	7.8	7.7	13.7	17.2	21	10	4.2	1.08	0.68	0	0 /16	0.00	38	9 /16	2.69
10/15/13	8	30	JD	70951	0.3760	0.0894	0.0894	617.6	0.1	576.3	0.0	2	1	0.032780	0.000952	329175	0.3127	2.5	0.071	8.1	7.9	15.0		19	6	3.7	1.41	0.70	0	0 /16	0.00	38	14 /16	6.73
10/16/13	8	00	JD	71311	0.3600	0.0000	0.0000	617.7	0.1	576.3	0.0	1	0	0.006496	0.000950	341651	0.3246	1.6	0.037	7.9	8.0	15.2		16	9	4.6	1.70	0.70	0	0 /16	0.00	39	2 /16	5.39
10/17/13	7	55	JD	71658	0.3470	0.0000	0.0000	617.7	0.0	576.3	0.0	0	1	0.019788	0.000952	310471	0.2949	1.3	0.035	8.2	8.1	15.0		14	0	4.2	1.71	0.70	0	0 /16	0.00	39	6 /16	5.39
10/18/13	7	40	JD	72146	0.4880	0.0000	0.0000	617.9	0.2	576.3	0.0	2	0	0.012992	0.001036	464838	0.4416	3.2	0.043	8.2	8.1	15.1		10	5	6.0	1.64	0.70	0	0 /16	0.00	39	12 /16	8.08
10/19/13	8	00	MB	72558	0.4120	0.0000	0.0000	617.9	0.0	576.3	0.0	1	1	0.026284	0.000978	377122	0.3583	1.3	0.036	8.0	8.1	15.9		8	3	3.5	1.16	0.72	0	0 /16	0.00	40	0 /16	4.04
10/20/13	7	45	MB	72949	0.3910	0.0000	0.0000	618.0	0.1	576.3	0.0	1	0	0.006496	0.000980	371443	0.3529	1.5	0.033	8.2	8.2	15.7		6	0	3.6	1.22	0.70	0	0 /16	0.00	40	6 /16	8.08
10/21/13	8	00	JD	73324	0.3750	0.0000	0.0000	618.1	0.1	576.3	0.0	0	1	0.019788	0.000978	339401	0.3224	1.2	0.041	8.2	7.8	15.3	18.2	3	14	3.5	1.29	0.72	0	0 /16	0.00	40	10 /16	5.39
10/22/13	7	25	JD	73812	0.4880	0.0000	0.0000	618.1	0.0	576.4	0.1	1	1	0.026284	0.001017	521751	0.4957	1.3	0.032	8.1	8.1	15.2		1	6	4.1	0.99	0.70	0	0 /16	0.00	41	0 /16	8.08
10/23/13	8	45	TR	74155	0.3430	0.0000	0.0000	618.1	0.0	576.5	0.1	1	0	0.006496	0.000937	366455	0.3481	1.5	0.038	8.3	8.2	15.2		33	7	3.5	1.21	0.70	0	0 /16	0.00	41	5 /16	6.73
10/24/13	7	50	JD	74545	0.3900	0.0000	0.0000	618.1	0.0	576.6	0.1	1	1	0.026284	0.000965	403559	0.3834	1.2	0.038	8.2	8.2	15.6		31	10	3.0	0.93	0.69	0	0 /16	0.00	41	10 /16	6.73
10/25/13	7	40	JD	74995	0.4500	0.1164	* 0.1164	618.1	0.0	576.7	0.1	2	0	0.012992	0.000991	479043	0.4551	1.6	0.037	8.0	8.2	15.8		29	4	3.9	1.02	0.70	0	0 /16	0.00	41	14 /16	5.39
10/26/13	7	00	DB	75283	0.2880	0.0740	* 0.0740	618.1	0.0	576.8	0.1	0	1	0.019788	0.000911	283700	0.2695	1.4	0.044	8.0	8.2	15.5		28	2	1.8	0.82	0.71	0	0 /16	0.00	42	2 /16	5.39
10/27/13	7	00	DB	75657	0.3740	0.0000	0.0000	618.1	0.0	576.8	0.0	1	0	0.006496	0.000963	361500	0.3434	1.3	0.043	8.1	8.2	15.7		26	4	3.1	1.07	0.70	0	0 /16	0.00	42	6 /16	2.69
10/28/13	8	15	JD	76017	0.3600	0.7213	* 0.7213	618.1	0.0	576.9	0.1	1	0	0.006496	0.000939	430765	0.4092	1.8	0.048	8.3	8.1	14.3	17.9	24	7	3.0	0.87	0.70	0	0 /16	0.00	42	10 /16	5.39
10/29/13	8	40	JD	76308	0.2910	1.1856	* 1.1856	618.1	0.0	576.9	0.0	0	1	0.019788	0.000924	277229	0.2634	1.9	0.056	8.0	7.9	13.3		22	15	2.5	1.12	0.70	0	0 /16	0.00	42	14 /16	5.39
10/30/13	8	10	JD	76678	0.3700	1.2690	* 1.2690	618.2	0.1	576.9	0.0	1	0	0.006496	0.000948	349145	0.3317	2.0	0.045	7.9	7.8	13.7		21	0	3.2	1.15	0.70	0	0 /16	0.00	43	1 /16	4.04
10/31/13	8	20	JD	76915	0.2370	1.1285	* 1.1285	618.2	0.0	576.9	0.0	0	0	0.000000	0.000889	221278	0.2102	1.9	0.038	7.6	7.8	13.5		19	15	1.7	0.99	0.69	0	0 /16	0.00	43	4 /16	4.04
TOTALS					12.1560		18.9762		1.5		1.1			0.504692	0.030013		11.4407									114.5					0.00			140.01
AVG.					0.3921		0.6121		0.0		0.0			0.016280			0.3691	3.7	0.040	8.0	7.9	14	17.5			3.7	1.20	0.70			0.00			4.52

WT. Of PAC plus WT. Of water

OPERATOR'S SIGNATURE:

AVG. NTU	0.04	AVG.PROD.	0.369055
HIGH NTU	0.07	HIGH PROD.	0.564918
LOW NTU	0.03	LOW PROD.	0.210214

* All or some transverse inflow.

Comb. Ph GPM	0.3091
Comb.Turb. GPD	776.0

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Nov 2013

				RAW WATER				AIR SCOUR BLOWERS				FILTERED WATER											CHLORINATION-12.5% SODIUM HYPOCHLORITE											
																TURBIDITY		PH										11% SODA ASH			ALUM POLYMER BLEND		
	TIME		OPER	TO PLANT	USAGE	TO POND	FLOW	NO.1	NO.1	NO.2	NO.2		B	BACK WASH	TEST METERS	METER	PRODUC.	RAW	TRT	RAW	TRT	WATER TEMP	ALK.		LB.	APPL.	TRT. RES.				NTU 926		
DATE	HR	MIN	INIT	METER	MG	METER	MG	METER	USE	METER	USE	F	W	MG	flow-MG		MG					CENT.		INCH	16'ths	USE	MG/L	PPM	INCH	16'S	LBS.	INCH	16'S	LBS.
				76915	0.3541	1.1285	1.1285	618.2		576.9						221278								19	15				0	0	0.0	43	4	
11/01/13	8	10	JD	77171	0.2560	1.2861	1.2861	618.3	0.1	576.9	0.0	1	1	0.026284	0.000902	227626	0.2208	1.8	0.043	7.5	7.8	13.5		18	12	2.8	0.99	0.70	0	0	/16 0.00	43	7	/16 4.04
11/02/13	8	55	JD	77456	0.2850	0.6164	0.6164	618.4	0.1	576.9	0.0	1	0	0.006496	0.000902	263619	0.2557	1.6	0.042	7.7	7.7	12.4		17	7	2.9	1.36	0.71	0	0	/16 0.00	43	11	/16 5.39
11/03/13	8	50	JD	77830	0.3740	0.0000	0.0000	618.4	0.0	576.9	0.0	1	0	0.006496	0.000958	356648	0.3459	1.7	0.031	7.6	7.7	12.4		15	11	2.9	0.99	0.70	0	0	/16 0.00	43	15	/16 5.39
11/04/13	7	50	JD	78125	0.2950	0.0000	0.0000	618.5	0.1	576.9	0.0	1	1	0.026284	0.000932	265163	0.2572	1.6	0.034	7.7	7.8	12.6	17.0	14	6	2.1	1.00	0.69	0	0	/16 0.00	44	2	/16 4.04
11/05/13	7	25	JD	78375	0.2500	0.0000	0.0000	618.5	0.0	576.9	0.0	0	1	0.019788	0.000897	261765	0.2539	1.4	0.036	7.8	7.8	11.6		12	14	2.5	1.16	0.71	0	0	/16 0.00	44	5	/16 4.04
11/06/13	7	50	JD	78828	0.4530	0.0000	0.0000	618.5	0.0	577.0	0.1	2	0	0.012992	0.000991	479338	0.4554	1.4	0.030	7.8	7.8	11.6		9	15	4.8	1.27	0.69	0	0	/16 0.00	44	10	/16 6.73
11/07/13	8	10	JD	79102	0.2740	0.0000	0.0000	618.5	0.0	577.1	0.1	1	1	0.026284	0.000915	279866	0.2659	1.4	0.028	7.7	7.8	11.8		8	9	2.1	0.95	0.70	0	0	/16 0.00	44	13	/16 4.04
11/08/13	8	00	MB	79318	0.2160	0.0000	0.0000	618.5	0.0	577.1	0.0	0	0	0.000000	0.000876	229753	0.2183	1.2	0.041	7.8	7.8	11.7		7	4	3.1	1.70	0.72	0	0	/16 0.00	45	0	/16 4.04
11/09/13	7	30	KM	79737	0.4190	0.0000	0.0000	618.5	0.0	577.2	0.1	1	0	0.006496	0.000974	441969	0.4199	1.2	0.031	8.1	7.8	12.0		31	7	4.0	1.14	0.70	0	0	/16 0.00	45	6	/16 8.08
11/10/13	7	30	KM	80083	0.3460	0.0000	0.0000	618.5	0.0	577.3	0.1	1	1	0.026284	0.000948	357782	0.3399	1.4	0.031	8.1	7.9	13.0		29	9	3.1	1.08	0.69	0	0	/16 0.00	45	8	/16 2.69
11/11/13	7	30	KM	80330	0.2470	0.0000	0.0000	618.5	0.0	577.3	0.0	0	0	0.000000	0.000891	268096	0.2547	1.4	0.031	8.1	8.0	13.5		27	13	2.9	1.35	0.70	0	0	/16 0.00	45	11	/16 4.04
11/12/13	7	50	MB	80655	0.3250	0.0000	0.0000	618.5	0.0	577.4	0.1	0	0	0.000000	0.000928	343822	0.3266	1.1	0.037	8.2	7.9	11.0	18.9	25	10	3.6	1.31	0.71	0	0	/16 0.00	46	2	/16 9.42
11/13/13	8	00	MB	81004	0.3490	0.0000	0.0000	618.7	0.2	577.4	0.0	2	1	0.032780	0.000945	308811	0.2934	1.1	0.031	8.2	7.8	12.1		23	7	3.6	1.46	0.70	0	0	/16 0.00	46	3	/16 1.35
11/14/13	8	25	MB	81362	0.3580	0.3710	0.3710	618.7	0.0	577.4	0.0	2	0	0.012992	0.000956	336196	0.3194	2.3	0.033	8.3	7.9	12.0		21	0	4.0	1.50	0.69	0	0	/16 0.00	46	7	/16 5.39
11/15/13	8	30	TR	81774	0.4120	1.7203	1.7203	618.8	0.1	577.4	0.0	1	1	0.026284	0.000978	383650	0.3645	2.4	0.036	8.3	7.8	11.5		18	5	3.0	0.99	0.69	0	0	/16 0.00	46	12	/16 6.73
11/16/13	9	30	TR	81991	0.2170	1.6247	1.6247	618.9	0.1	577.4	0.0	1	0	0.006496	0.000880	201350	0.1913	2.0	0.034	8.2	7.7	11.3		16	14	3.0	1.88	0.69	0	0	/16 0.00	46	15	/16 4.04
11/17/13	8	45	TR	82335	0.3440	1.6055	1.6055	618.9	0.0	577.4	0.0	1	0	0.006496	0.000943	320000	0.3040	1.9	0.032	8.0	7.7	10.8		14	11	3.0	1.18	0.69	0	0	/16 0.00	47	3	/16 5.39
11/18/13	8	10	MB	82692	0.3570	0.8408	0.8408	619.0	0.1	577.4	0.0	0	1	0.019788	0.000969	328192	0.3118	1.9	0.034	8.0	7.8	10.6	14.7	12	8	3.6	1.38	0.66	0	0	/16 0.00	47	6	/16 4.04
11/19/13	8	00	MB	82924	0.2320	0.0000	0.0000	619.0	0.0	577.5	0.1	1	1	0.026284	0.000887	231844	0.2203	1.8	0.073	8.1	7.6	10.8		11	2	2.3	1.23	0.69	0	0	/16 0.00	47	9	/16 4.04
11/20/13	8	10	MB	83218	0.2940	0.0000	0.0000	619.0	0.0	577.5	0.0	1	0	0.006496	0.000921	312432	0.2968	2.0	0.032	8.1	7.6	11.0		9	6	7.0	2.83	0.69	0	0	/16 0.00	47	13	/16 5.39
11/21/13	8	10	MB	83489	0.2710	0.0000	0.0000	619.0	0.0	577.6	0.1	1	0	0.006496	0.000910	279667	0.2657	1.7	0.033	8.1	7.6	10.6		7	11	2.8	1.25	0.71	0	0	/16 0.00	48	0	/16 4.04
11/22/13	8	00	MB	83787	0.2980	0.0000	0.0000	619.0	0.0	577.6	0.0	0	1	0.019788	0.000939	280387	0.2664	1.7	0.034	8.4	7.5	9.8		5	13	3.1	1.38	0.70	0	0	/16 0.00	48	3	/16 4.04
11/23/13	9	05	MB	84104	0.3170	0.0000	0.0000	619.0	0.0	577.7	0.1	0	1	0.019788	0.000924	293926	0.2792	1.7	0.031	8.2	7.6	9.3		34	10	4.0	1.72	0.70	0	0	/16 0.00	48	5	/16 2.69
11/24/13	7	40	MB	84310	0.2060	0.0000	0.0000	619.0	0.0	577.7	0.0	1	0	0.006496	0.000872	183642	0.1745	1.8	0.040	8.3	7.7	9.2		33	5	2.1	1.48	0.73	0	0	/16 0.00	48	9	/16 5.39
11/25/13	8	15	JD	84800	0.4900	0.0000	0.0000	619.0	0.0	577.8	0.1	1	1	0.026284	0.001032	444245	0.4220	1.7	0.031	8.1	7.7	9.0	16.2	30	2	4.5	1.28	0.69	0	0	/16 0.00	48	14	/16 6.73
11/26/13	7	55	JD	85143	0.3430	0.0000	0.0000	619.0	0.0	577.9	0.1	1	1	0.026284	0.000928	342749	0.3256	1.9	0.030	8.0	7.7	9.2		27	13	3.8	1.39	0.69	0	0	/16 0.00	49	1	/16 4.04
11/27/13	8	00	DB	85350	0.2070	0.0000	0.0000	619.0	0.0	577.9	0.0	0	0	0.000000	0.000869	216507	0.2057	1.5	0.036	7.9	7.8	11.4		26	4	2.6	1.49	0.70	0	0	/16 0.00	49	3	/16 2.69
11/28/13	8	00	DB	85566	0.2160	0.0000	0.0000	619.0	0.0	578.0	0.1	1	0	0.006496	0.000865	224926	0.2137	1.5	0.037	7.9	7.8	9.7		25	0	2.0	1.15	0.71	0	0	/16 0.00	49	6	/16 4.04
11/29/13	8	00	DB	85952	0.3860	0.0000	0.0000	619.0	0.0	578.0	0.0	1	0	0.006496	0.000967	416026	0.3952	2.3	0.037	8.0	7.8	9.7		22	12	3.7	1.12	0.70	0	0	/16 0.00	49	9	/16 4.04
11/30/13	8	00	DB	86091	0.1390	0.0000	0.0000	619.0	0.0	578.0	0.0	0	0	0.000000	0.000841	137456	0.1306	1.5	0.040	7.9	7.8	10.2		21	15	1.3	1.22	0.71	0	0	/16 0.00	49	11	/16 2.69
	TOTALS				9.1760		8.0648		0.8		1.1			0.413148	0.027740		8.5941									96.0					0.00			138.67
	AVG.				0.3059		0.2688		0.0		0.0			0.013772			0.2865	1.7	0.036	8.0	7.8	11	16.7			3.2	1.34	0.70			0.00			4.62

WT. Of PAC plus WT. Of water

OPERATOR'S SIGNATURE:

AVG. NTU	0.04	AVG.PROD. 0.286469
HIGH NTU	0.07	HIGH PROD. 0.455371
LOW NTU	0.03	LOW PROD. 0.130583

* All or some transverse inflow.

Comb. Ph GPM	0.3091
Comb.Turb. GPD	776.0

NORTH YUBA WATER DISTRICT
FORBESTOWN WATER TREATMENT PLANT
OPERATORS RECORD
SYSTEM NO. 58-006
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				RAW WATER				AIR SCOUR BLOWERS						FILTERED WATER				TURBIDITY		PH				CHLORINATION-12.5% SODIUM HYPOCHLORITE											
	TIME		OPER	TO PLANT	USAGE	TO POND	FLOW	NO.1	NO.1	NO.2	NO.2		B	BACK WASH	TEST METERS	METER	PRODUC.	RAW	TRT	RAW	TRT	WATER TEMP	ALK.		LB.	APPL.	TRT. RES.	11% SODA ASH			ALUM POLYMER BLEND NTU 926		
DATE	HR	MIN	INIT	METER	MG	METER	MG	METER	USE	METER	USE	F	W	MG	flow-MG		MG					CENT.		INCH	16'ths	USE	MG/L	PPM	INCH	16'S	LBS.	INCH	16'S	LBS.
				86091	0.3541	0.0000	0.0000	619.0		578.0						137456								21	15				0	0	0.0	49	11	
12/01/13	7	45	DB	86379	0.2880	1.1160	* 1.1160	619.0	0.0	578.1	0.1	1	1	0.026284	0.000911	296885	0.2880	2.5	0.047	7.9	7.8	10.1		20	4	5.2	1.27	0.71	0	0 /16	0.00	49	14 /16	4.04
12/02/13	8	30	JD	86687	0.3080	1.7450	* 1.7450	619.0	0.0	578.2	0.1	1	0	0.006496	0.000921	332525	0.3225	2.2	0.054	8.0	7.7	9.7	17.5	18	8	2.9	1.07	0.71	0	0 /16	0.00	50	2 /16	5.39
12/03/13	8	00	DB	86944	0.2570	1.7935	* 1.7935	619.1	0.1	578.2	0.0	1	1	0.026284	0.000902	231536	0.2246	2.2	0.035	7.7	7.7	10.2		17	2	2.3	1.20	0.71	0	0 /16	0.00	50	4 /16	2.69
12/04/13	8	10	JD	87362	0.4180	0.4045	* 0.4045	619.2	0.1	578.2	0.0	1	0	0.006496	0.000993	389085	0.3774	1.7	0.040	8.0	7.6	9.5		15	0	3.5	1.11	0.70	0	0 /16	0.00	50	9 /16	6.73
12/05/13	8	15	JD	87718	0.3560	0.0000	0.0000	619.2	0.0	578.2	0.0	1	1	0.026284	0.000960	326275	0.3165	1.7	0.033	7.9	7.6	9.0		13	0	1.9	0.72	0.67	0	0 /16	0.00	50	12 /16	4.04
12/06/13	8	45	TR	87894	0.1760	0.0000	0.0000	619.2	0.0	578.2	0.0	1	0	0.006496	0.000861	161903	0.1538	1.7	0.037	7.9	7.5	7.8		12	0	1.6	1.28	0.71	0	0 /16	0.00	50	15 /16	4.04
12/07/13	9	00	TR	88407	0.5130	0.0000	0.0000	619.4	0.2	578.2	0.0	2	1	0.032780	0.001047	470190	0.4467	2.1	0.039	8.0	7.5	6.5		9	4	4.5	1.21	0.69	0	0 /16	0.00	51	4 /16	6.73
12/08/13	8	00	TR	88761	0.3540	0.0000	0.0000	619.4	0.0	578.2	0.0	0	0	0.000000	0.000956	334572	0.3178	2.0	0.036	8.0	7.5	6.0		7	1	3.1	1.17	0.68	0	0 /16	0.00	51	7 /16	4.04
12/09/13	7	55	JD	89267	0.5060	0.0000	0.0000	619.6	0.2	578.2	0.0	2	1	0.032780	0.001050	458913	0.4360	1.6	0.038	8.1	7.6	5.9	15.9	4	0	5.0	1.38	0.70	0	0 /16	0.00	51	13 /16	8.08
12/10/13	8	20	JD	89792	0.5250	0.0000	0.0000	619.6	0.0	578.3	0.1	1	1	0.026284	0.001028	560196	0.5322	1.7	0.037	8.1	7.5	6.1		0	13	5.2	1.18	0.69	0	0 /16	0.00	52	3 /16	8.08
12/11/13	8	10	JD	90447	0.6550	0.0000	0.0000	619.6	0.0	578.4	0.1	2	1	0.032780	0.001095	690555	0.6560	1.6	0.038	8.0	7.6	6.2		27	11	6.0	1.10	0.69	0	0 /16	0.00	52	8 /16	6.73
12/12/13	8	25	JD	91093	0.6460	0.0000	0.0000	619.6	0.1	578.5	0.1	2	0	0.012992	0.001088	687833	0.6534	1.8	0.031	7.9	7.6	6.1		21	13	9.6	1.77	0.70	0	0 /16	0.00	35	2 /16	6.73
12/13/13	8	25	JD	91444	0.3510	0.3514	* 0.3514	619.6	0.0	578.6	0.1	1	1	0.026284	0.000948	375011	0.3563	2.5	0.040	7.8	7.7	6.0		20	2	2.8	0.93	0.70	0	0 /16	0.00	35	3 /16	1.35
12/14/13	7	00	MB	91837	0.3930	0.7428	* 0.7428	619.6	0.0	578.7	0.1	1	0	0.006496	0.000960	419401	0.3984	2.6	0.035	7.8	7.5	6.0		17	4	4.7	1.42	0.69	0	0 /16	0.00	35	5 /16	2.69
12/15/13	8	30	MB	92314	0.4770	1.4314	* 1.4314	619.6	0.0	578.8	0.1	0	1	0.019788	0.001015	500829	0.4758	2.7	0.044	8.0	7.5	5.8		13	10	5.9	1.50	0.70	0	0 /16	0.00	35	10 /16	6.73
12/16/13	8	00	JD	92594	0.2800	1.3852	* 1.3852	619.6	0.0	578.9	0.1	1	0	0.006496	0.000906	302691	0.2876	1.9	0.036	7.9	7.7	6.2	16.4	11	7	3.6	1.49	0.70	0	0 /16	0.00	35	13 /16	4.04
12/17/13	8	00	JD	92862	0.2680	1.1299	* 1.1299	619.6	0.0	578.9	0.0	1	0	0.006496	0.000915	241374	0.2293	2.4	0.038	7.9	7.6	6.2		9	6	2.3	1.20	0.70	0	0 /16	0.00	36	1 /16	5.39
12/18/13	7	30	JD	93332	0.4700	0.0000	0.0000	619.7	0.1	578.9	0.0	2	0	0.012992	0.001013	431061	0.4095	2.2	0.178	8.0	7.6	6.6		20	8	4.9	1.43	0.69	0	0 /16	0.00	36	6 /16	6.73
12/19/13	7	55	JD	93580	0.2480	0.0000	0.0000	619.7	0.0	578.9	0.0	0	0	0.000000	0.000898	232785	0.2211	1.8	0.056	7.8	7.6	6.7		18	3	3.8	2.05	0.70	0	0 /16	0.00	36	8 /16	4.04
12/20/13	8	05	JD	93862	0.2820	0.0000	0.0000	619.8	0.1	578.9	0.0	1	0	0.006496	0.000910	260890	0.2478	2.3	0.051	7.8	7.6	6.5		15	10	4.2	2.03	0.71	0	0 /16	0.00	36	11 /16	4.04
12/21/13	9	30	JD	94092	0.2300	0.0000	0.0000	619.9	0.1	578.9	0.0	1	0	0.006496	0.000897	206467	0.1961	2.6	0.135	7.8	7.6	7.5		14	0	2.7	1.63	0.70	0	0 /16	0.00	36	15 /16	5.39
12/22/13	9	50	JD	94477	0.3850	0.0000	0.0000	619.9	0.0	578.9	0.0	1	1	0.026284	0.000963	352562	0.3349	1.9	0.064	7.9	7.6	7.6		11	1	4.8	1.72	0.69	0	0 /16	0.00	37	2 /16	4.04
12/23/13	8	10	JD	94680	0.2030	0.0000	0.0000	619.9	0.0	578.9	0.0	0	0	0.000000	0.000871	190752	0.1812	1.9	0.041	7.8	7.7	6.9	16.7	10	8	0.9	0.61	0.70	0	0 /16	0.00	37	4 /16	2.69
12/24/13	8	00	JD	94925	0.2450	0.0000	0.0000	619.9	0.0	578.9	0.0	0	1	0.019788	0.000887	250718	0.2382	1.8	0.041	7.9	7.6	7.6		7	12	4.5	2.27	0.69	0	0 /16	0.00	37	7 /16	4.04
12/25/13	9	35	JD	95326	0.4010	0.0000	0.0000	619.9	0.0	579.0	0.1	1	0	0.006496	0.000960	425327	0.4041	1.6	0.032	7.8	7.6	7.8		34	11	4.9	1.45	0.69	0	0 /16	0.00	37	11 /16	5.39
12/26/13	7	50	JD	95540	0.2140	0.0000	0.0000	619.9	0.0	579.0	0.0	1	0	0.006496	0.000878	224299	0.2131	1.4	0.035	7.8	7.6	8.0		33	13	1.4	0.81	0.70	0	0 /16	0.00	37	13 /16	2.69
12/27/13	7	35	JD	95772	0.2320	0.0000	0.0000	619.9	0.0	579.1	0.1	0	1	0.019788	0.000884	232799	0.2212	1.7	0.037	7.9	7.6	7.0		32	15	1.4	0.78	0.70	0	0 /16	0.00	38	0 /16	2.69
12/28/13	8	45	MB	96084	0.3120	0.0000	0.0000	619.9	0.0	579.1	0.0	1	0	0.006496	0.000913	322921	0.3068	1.7	0.045	8.1	7.6	6.6		31	12	1.9	0.76	0.54	0	0 /16	0.00	38	2 /16	2.69
12/29/13	9	20	MB	96481	0.3970	0.0000	0.0000	619.9	0.0	579.2	0.1	1	0	0.006496	0.000999	438076	0.4162	1.6	0.096	8.1	7.6	6.7		30	4	2.5	0.71	0.70	0	0 /16	0.00	38	7 /16	6.73
12/30/13	7	50	JD	96730	0.2490	0.0000	0.0000	619.9	0.0	579.3	0.1	1	1	0.026284	0.000893	248376	0.2360	1.4	0.035	7.9	7.6	7.3	16.1	29	4	1.6	0.83	0.71	0	0 /16	0.00	38	10 /16	4.04
12/31/13	8	25	JD	96983	0.2530	0.0000	0.0000	620.0	0.1	579.3	0.0	0	1	0.019788	0.000891	229225	0.2178	1.4	0.035	8.0	7.6	7.9		28	4	1.6	0.90	0.69	0	0 /16	0.00	38	13 /16	4.04
	TOTALS				10.8920		10.0997		1.1		1.3			0.465416	0.029412		10.3163									111.3					0.00			146.74
	AVG.				0.3514		0.3258		0.0		0.0			0.015013			0.3328	1.9	0.050	7.9	7.6	7.2	16.5			3.6	1.26	0.69			0.00			4.73

WT. Of PAC plus WT. Of water

OPERATOR'S SIGNATURE:

AVG. NTU	0.05	AVG.PROD.	0.332782
HIGH NTU	0.18	HIGH PROD.	0.656027
LOW NTU	0.03	LOW PROD.	0.153808

* All or some

NORTH YUBA WATER DISTRICT
FORBESTOWN WATER TREATMENT PLANT
OPERATORS RECORD
SYSTEM NO. 58-006
Jan 2014

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OPERATORS RECORD
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				RAW WATER				AIR SCOUR BLOWERS						FILTERED WATER				TURBIDITY		PH				CHLORINATION-12.5% SODIUM HYPOCHLORITE											
DATE	TIME HR	MIN	OPER INIT	TO PLANT METER	USAGE MG	TO POND METER	FLOW MG	NO.1 METER	NO.1 USE	NO.2 METER	NO.2 USE	F	B W	BACK WASH MG	TEST METERS flow-MG	METER	PRODUC. MG	RAW	TRT	RAW	TRT	WATER TEMP CENT.	ALK.			LB. APPL. INCH	APPL. 16'ths	TRT. RES. USE	11% SODA ASH MG/L	11% SODA ASH PPM	INCH	16'S	LBS.	ALUM POLYMER BLEND NTU 926 INCH	16'S	LBS.
				96983	0.3541	0.0000	0.0000	620.0		579.3						229225								28	4						0	0	0.0	38	13	
01/01/14	8	00	DB	97347	0.3640	0.6762	0.6762	620.0	0.0	579.3	0.0	1	0	0.006496	0.000947	327871	0.3279	1.9	0.033	8.0	7.9	7.9		26	14	2.3	0.85	0.69	0	0	/16	0.00	39	1	/16	5.39
01/02/14	8	10	JD	97596	0.2490	0.9378	0.9378	620.1	0.1	579.3	0.0	1	0	0.006496	0.000917	233286	0.2333	2.2	0.069	7.9	7.6	6.8		25	15	1.5	0.79	0.70	0	0	/16	0.00	39	3	/16	2.69
01/03/14	8	10	JD	97812	0.2160	1.0048	1.0048	620.1	0.0	579.3	0.0	0	1	0.019788	0.000882	186702	0.1867	1.9	0.041	7.9	7.6	8.4		25	2	1.3	0.85	0.70	0	0	/16	0.00	39	6	/16	4.04
01/04/14	8	00	DB	98084	0.2720	1.0801	1.0801	620.2	0.1	579.3	0.0	1	0	0.006496	0.000904	242143	0.2421	1.8	0.039	7.7	7.6	8.6		24	1	1.7	0.86	0.71	0	0	/16	0.00	39	9	/16	4.04
01/05/14	8	00	DB	98412	0.3280	1.1381	1.1381	620.3	0.1	579.3	0.0	1	0	0.006496	0.000943	297222	0.2972	1.7	0.039	7.9	7.5	8.4		22	14	1.9	0.78	0.70	0	0	/16	0.00	39	12	/16	4.04
01/06/14	8	00	JD	98757	0.3450	0.8850	0.8850	620.3	0.0	579.3	0.0	1	1	0.026284	0.000939	302815	0.3028	1.8	0.045	8.1	7.6	7.8	16.1	21	10	2.0	0.81	0.70	0	0	/16	0.00	40	0	/16	5.39
01/07/14	7	50	JD	99055	0.2980	0.0000	0.0000	620.3	0.0	579.3	0.0	0	1	0.019788	0.000913	304183	0.3042	2.5	0.050	8.0	7.6	7.9		20	9	1.7	0.69	0.70	0	0	/16	0.00	40	3	/16	4.04
01/08/14	7	40	JD	99235	0.1800	0.0000	0.0000	620.3	0.0	579.4	0.1	1	0	0.006496	0.000858	180770	0.1808	1.6	0.044	7.9	7.6	8.0		19	15	1.0	0.68	0.71	0	0	/16	0.00	40	4	/16	1.35
01/09/14	7	45	JD	99604	0.3690	0.0000	0.0000	620.3	0.0	579.4	0.0	1	0	0.006496	0.000952	388751	0.3888	1.5	0.036	7.9	7.6	7.9		18	9	2.3	0.69	0.70	0	0	/16	0.00	40	7	/16	4.04
01/10/14	9	55	JD	99848	0.2440	0.0000	0.0000	620.3	0.0	579.5	0.1	0	1	0.019788	0.000887	243607	0.2436	1.5	0.042	7.9	7.6	8.1		17	12	1.3	0.65	0.69	0	0	/16	0.00	40	10	/16	4.04
01/11/14	8	30	JD	100050	0.2020	0.0000	0.0000	620.3	0.0	579.5	0.0	1	0	0.006496	0.000867	202486	0.2025	1.4	0.037	8.0	7.5	8.2		17	0	1.2	0.73	0.70	0	0	/16	0.00	40	12	/16	2.69
01/12/14	9	40	JD	100478	0.4280	0.0000	0.0000	620.3	0.1	579.6	0.1	1	0	0.006496	0.000982	445439	0.4454	1.4	0.036	7.9	7.6	8.1		15	15	1.7	0.47	0.69	0	0	/16	0.00	40	15	/16	4.04
01/13/14	9	00	JD	100599	0.1210	0.0000	0.0000	620.4	0.0	579.6	0.0	0	1	0.019788	0.000833	107602	0.1076	1.4	0.044	7.9	7.6	7.7	17.0	15	1	1.4	1.60	0.70	0	0	/16	0.00	41	1	/16	2.69
01/14/14	8	05	JD	100913	0.3140	0.0000	0.0000	620.4	0.0	579.6	0.0	0	1	0.019788	0.000926	282125	0.2821	1.1	0.042	7.9	7.6	7.9		14	0	1.7	0.74	0.70	0	0	/16	0.00	41	3	/16	2.69
01/15/14	8	00	JD	101279	0.3660	0.0000	0.0000	620.4	0.0	579.6	0.0	1	0	0.006496	0.000947	331145	0.3311	1.2	0.034	8.0	7.6	8.1		12	9	2.4	0.85	0.70	0	0	/16	0.00	41	7	/16	5.39
01/16/14	9	00	KM	101421	0.1420	0.0000	0.0000	620.5	0.1	579.6	0.0	1	0	0.006496	0.000843	123917	0.1239	1.3	0.035	8.1	7.8	8.4		12	1	0.8	0.79	0.69	0	0	/16	0.00	41	8	/16	1.35
01/17/14	8	00	KM	101670	0.2490	0.0000	0.0000	620.5	0.0	579.6	0.0	0	0	0.000000	0.000906	229969	0.2300	1.4	0.038	8.1	7.8	8.4		11	3	1.4	0.75	0.69	0	0	/16	0.00	41	10	/16	2.69
01/18/14	7	00	KM	101952	0.2820	0.0000	0.0000	620.6	0.1	579.6	0.0	0	1	0.019788	0.000915	238868	0.2389	1.3	0.036	8.0	7.8	8.1		29	2	2.4	1.20	0.70	0	0	/16	0.00	41	13	/16	4.04
01/19/14	7	00	KM	102306	0.3540	0.0000	0.0000	620.6	0.0	579.6	0.0	1	0	0.006496	0.000943	315806	0.3158	1.2	0.032	7.9	7.8	8.1		27	13	2.1	0.82	0.70	0	0	/16	0.00	42	1	/16	4.04
01/20/14	7	00	KM	102594	0.2880	0.0000	0.0000	620.7	0.1	579.6	0.0	1	0	0.006496	0.000923	255333	0.2553	1.1	0.031	7.9	7.8	8.0		26	13	1.6	0.77	0.71	0	0	/16	0.00	42	3	/16	2.69
01/21/14	7	40	JD	102896	0.3020	0.0000	0.0000	620.8	0.1	579.6	0.0	1	1	0.026284	0.000923	250605	0.2506	1.1	0.039	8.1	7.7	7.9	16.5	25	14	1.5	0.73	0.70	0	0	/16	0.00	42	6	/16	4.04
01/22/14	8	15	TR	103167	0.2710	0.0000	0.0000	620.8	0.0	579.7	0.1	1	1	0.026284	0.000906	247231	0.2472	2.1	0.039	8.0	7.6	8.0		24	14	1.6	0.79	0.70	0	0	/16	0.00	42	9	/16	4.04
01/23/14	8	15	TR	103567	0.4000	0.8193	0.8193	620.8	0.0	579.8	0.1	2	0	0.012992	0.000961	400075	0.4001	1.9	0.036	8.0	7.7	8.2		23	9	2.1	0.64	0.70	0	0	/16	0.00	42	13	/16	5.39
01/24/14	8	15	TR	103871	0.3040	1.3537	1.3537	620.8	0.0	579.9	0.1	1	1	0.026284	0.000930	301258	0.3013	2.2	0.059	8.2	7.7	8.6		22	4	2.1	0.86	0.70	0	0	/16	0.00	43	0	/16	4.04
01/25/14	8	45	TR	104004	0.1330	1.7671	1.7671	620.8	0.0	579.9	0.0	0	0	0.000000	0.000839	139244	0.1392	2.4	0.046	8.1	7.7	8.6		21	7	1.3	1.15	0.70	0	0	/16	0.00	43	1	/16	1.35
01/26/14	8	45	TR	104386	0.3820	1.8204	1.8204	620.8	0.0	579.9	0.0	1	0	0.006496	0.000954	395260	0.3953	2.2	0.038	8.1	7.6	7.8		20	8	1.5	0.47	0.70	0	0	/16	0.00	43	5	/16	5.39
01/27/14	7	45	MB	104688	0.3020	1.8201	1.8201	620.8	0.0	580.0	0.1	1	0	0.006496	0.000924	312941	0.3129	2.1	0.046	8.0	7.6	7.6	12.9	19	9	1.5	0.59	0.63	0	0	/16	0.00	43	7	/16	2.69
01/28/14	8	00	MB	104839	0.1510	0.4116	0.4116	620.9	0.1	580.0	0.0	0	1	0.019788	0.000843	124224	0.1242	2.1	0.048	8.1	7.6	8.6		18	12	1.3	1.28	0.74	0	0	/16	0.00	43	8	/16	1.35
01/29/14	8	20	MB	105125	0.2860	0.0000	0.0000	620.9	0.0	580.0	0.0	1	0	0.006496	0.000910	255844	0.2558	1.9	0.043	7.9	7.7	8.8		18	1	1.1	0.53	0.71	0	0	/16	0.00	43	11	/16	4.04
01/30/14	8	25	MB	105429	0.3040	0.0000	0.0000	621.0	0.1	580.0	0.0	1	0	0.006496	0.000921	278637	0.2786	2.1	0.041	8.0	7.6	9.0		17	9	0.8	0.35	0.71	0	0	/16	0.00	44	3	/16	10.77
01/31/14	8	15	MB	105647	0.2180	0.0000	0.0000	621.0	0.0	580.0	0.0	0	1	0.019788	0.000882	195588	0.1956	2.3	0.043	8.1	7.5	8.9		17	1	0.8	0.50	0.71	0	0	/16	0.00	44	0	/16	4.04
	TOTALS				8.6640		13.7142		1.0		0.7			0.380368	0.028218		8.1409									50.1						0.00				118.47
	AVG.				0.2795		0.4424		0.0		0.0			0.012270			0.2626	1.7	0.041	8.0	7.6	8	15.6			1.6	0.78	0.70				0.00				3.82

WT. Of PAC plus WT. Of water

OPERATOR'S SIGNATURE:

AVG. NTU	0.04	AVG.PROD.	0.262611
HIGH NTU	0.07	HIGH PROD.	0.445439
LOW NTU	0.03	LOW PROD.	0.107602

* All or some transverse inflow.

Comb. Ph GPM	0.3091
Comb.Turb. GPD	776.0

NORTH YUBA WATER DISTRICT
FORBESTOWN WATER TREATMENT PLANT
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				RAW WATER				AIR SCOUR BLOWERS				FILTERED WATER											CHLORINATION-12.5% SODIUM HYPOCHLORITE											
																		TURBIDITY		PH						LB.	APPL.	TRT.	11% SODA ASH			ALUM POLYMER BLEND		
	TIME		OPER	TO PLANT	USAGE	TO POND		NO.1	NO.1	NO.2	NO.2			BACK WASH	TEST METERS	METER	PRODUC.	RAW	TRT	RAW	TRT	WATER TEMP	ALK.				RES.			NTU 926		
DATE	HR	MIN	INIT	METER	MG	METER		METER	USE	METER	USE	F	W	MG	flow-MG		MG					CENT.		INCH	16'ths	USE	MG/L	PPM	INCH	16'S	LBS.	INCH	16'S	LBS.
				105647	0.3541	0.0000		0.0000	621.0		580.0					195588								18	1				0	0	0.0	44	0	
02/01/13	7	25	MB	105844	0.1970	0.0000		0.0000	621.1	0.1	580.0	0.0	1	0	0.006496	0.000865	170705	0.1707	2.0	0.041	8.2	7.5	8.3		17	1	1.1	1.27	0.73	0	0 /16	0.00	44	2 /16	2.69
02/02/13	7	52	MB	106262	0.4180	0.0000		0.0000	621.1	0.0	580.0	0.0	1	0	0.006496	0.000971	375139	0.3751	2.2	0.039	8.2	7.7	8.2		16	1	1.6	0.52	0.69	0	0 /16	0.00	44	6 /16	5.39
02/03/13	8	10	MB	106545	0.2830	0.0000		0.0000	621.2	0.1	580.0	0.0	0	1	0.019788	0.000928	252182	0.2522	4.2	0.055	8.2	7.6	7.3	15.6	15	2	1.5	0.73	0.67	0	0 /16	0.00	44	8 /16	2.69
02/04/13	8	05	DB	106661	0.1160	0.0000		0.0000	621.2	0.0	580.0	0.0	0	0	0.000000	0.000828	103976	0.1040	1.8	0.041	8.1	7.6	8.0		14	10	0.8	0.94	0.73	0	0 /16	0.00	44	10 /16	2.69
02/05/13	8	05	DB	106942	0.2810	0.0000		0.0000	621.3	0.1	580.0	0.0	0	2	0.039576	0.000913	378427	0.3784	1.7	0.054	8.1	7.6	8.4		13	12	1.9	0.60	0.70	0	0 /16	0.00	44	12 /16	2.69
02/06/13	8	00	DB	107209	0.2670	0.0000		0.0000	621.3	0.0	580.0	0.0	1	0	0.006496	0.000898	268928	0.2689	1.8	0.042	8.0	7.6	7.5		12	14	1.4	0.64	0.70	0	0 /16	0.00	44	14 /16	2.69
02/07/13	8	00	DB	107485	0.2760	0.0000		0.0000	621.3	0.0	580.1	0.1	1	0	0.006496	0.000906	281390	0.2814	2.1	0.037	8.0	7.5	8.0		12	0	1.4	0.61	0.70	0	0 /16	0.00	45	1 /16	4.04
02/08/13	8	00	DB	107733	0.2480	0.0000		0.0000	621.3	0.0	580.2	0.1	1	1	0.026284	0.000889	222502	0.2225	4.2	0.041	7.9	7.4	8.2		11	4	1.2	0.66	0.72	0	0 /16	0.00	45	3 /16	2.69
02/09/13	8	00	DB	107998	0.2650	0.0000		0.0000	621.3	0.0	580.2	0.0	0	0	0.000000	0.000902	275180	0.2752	11.2	0.053	7.8	7.4	8.8		10	6	1.4	0.62	0.70	0	0 /16	0.00	45	5 /16	2.69
02/10/13	8	00	DB	108229	0.2310	0.0000		0.0000	621.3	0.0	580.2	0.0	1	0	0.006496	0.000893	257700	0.2577	10.6	0.047	7.7	7.4	8.7	16.4	9	9	1.3	0.62	0.70	0	0 /16	0.00	45	8 /16	4.04
02/11/13	8	00	JD	108438	0.2090	0.6633	*	0.6633	621.3	0.0	580.2	0.0	0	0	0.000000	0.000882	200465	0.2005	8.5	0.067	7.6	7.5	8.9		8	14	1.1	0.67	0.71	0	0 /16	0.00	45	9 /16	1.35
02/12/13	8	15	JD	108770	0.3320	0.0000		0.0000	621.5	0.1	580.2	0.0	1	2	0.046072	0.000932	276629	0.2766	8.6	0.050	7.9	7.5	8.8		7	14	1.6	0.71	0.72	0	0 /16	0.00	45	13 /16	5.39
02/13/13	8	15	JD	108987	0.2170	0.0000		0.0000	621.5	0.0	580.2	0.0	0	0	0.000000	0.000876	199698	0.1997	9.7	0.069	7.9	7.6	9.8		7	1	1.3	0.80	0.70	0	0 /16	0.00	45	15 /16	2.69
02/14/13	8	05	JD	109251	0.2640	0.0000		0.0000	621.6	0.1	580.2	0.0	1	0	0.006496	0.000906	242991	0.2430	8.7	0.121	7.8	7.6	10.3		6	3	1.4	0.71	0.71	0	0 /16	0.00	46	1 /16	2.69
02/15/13	9	10	JD	109560	0.3090	0.0000		0.0000	621.6	0.0	580.2	0.0	0	0	0.000000	0.000926	278681	0.2787	8.3	0.090	7.8	7.6	10.8		5	0	1.9	0.84	0.70	0	0 /16	0.00	46	4 /16	4.04
02/16/13	10	15	JD	109817	0.2570	0.0000		0.0000	621.6	0.0	580.2	0.0	1	0	0.006496	0.000897	232107	0.2321	11.1	0.090	7.8	7.6	11.3		4	1	1.5	0.79	0.69	0	0 /16	0.00	46	6 /16	2.69
02/17/13	8	10	JD	110001	0.1840	0.0000		0.0000	621.7	0.1	580.2	0.0	1	0	0.006496	0.000863	166515	0.1665	7.9	0.064	7.9	7.6	10.4	17.0	3	9	0.8	0.59	0.67	0	0 /16	0.00	46	8 /16	2.69
02/18/13	8	45	KM	110281	0.2800	0.0000		0.0000	621.7	0.0	580.2	0.0	0	1	0.019788	0.000910	285719	0.2857	7.2	0.079	7.9	7.5	10.2		36	11	2.9	1.22	0.73	0	0 /16	0.00	46	11 /16	4.04
02/19/13	8	00	KM	110524	0.2430	0.0000		0.0000	621.7	0.0	580.3	0.1	1	0	0.006496	0.000893	241417	0.2414	6.7	0.067	6.8	7.2	11.1		33	1	2.3	1.14	0.70	0	0 /16	0.00	46	12 /16	4.04
02/20/13	8	00	KM	110782	0.2580	0.0000		0.0000	621.7	0.0	580.4	0.1	0	0	0.000000	0.000913	263976	0.2640	6.1	0.066	7.3	7.3	10.4		31	13	2.0	0.93	0.72	0	0 /16	0.00	46	15 /16	4.04
02/21/13	8	00	KM	111030	0.2480	0.0000		0.0000	621.7	0.0	580.4	0.0	0	1	0.019788	0.000906	266963	0.2670	5.6	0.042	7.7	7.3	10.6		30	9	2.0	0.92	0.69	0	0 /16	0.00	47	2 /16	4.04
02/22/13	7	30	KM	111244	0.2140	0.0000		0.0000	621.7	0.0	580.4	0.0	0	1	0.019788	0.000893	227381	0.2274	5.0	0.045	7.7	7.3	10.7		29	15	1.0	0.54	0.73	0	0 /16	0.00	47	3 /16	1.35
02/23/13	7	30	KM	111483	0.2390	0.0000		0.0000	621.7	0.0	580.5	0.1	0	1	0.019788	0.000900	244023	0.2440	5.0	0.042	7.7	7.5	11.1		28	15	1.6	0.80	0.70	0	0 /16	0.00	47	7 /16	5.39
02/24/13	8	00	KM	111761	0.2780	0.0000		0.0000	621.7	0.0	580.5	0.0	1	0	0.006496	0.000921	290770	0.2908	4.6	0.048	7.9	7.3	11.9	16.9	27	11	2.0	0.84	0.72	0	0 /16	0.00	47	9 /16	2.69
02/25/13	8	15	TR	112022	0.2610	0.3070	*	0.3070	621.8	0.1	580.5	0.0	1	1	0.026284	0.000906	222104	0.2221	5.9	0.067	7.9	7.4	11.2		26	10	1.7	0.94	0.68	0	0 /16	0.00	47	11 /16	2.69
02/26/13	8	00	TR	112284	0.2620	2.1413	*	2.1413	621.9	0.1	580.5	0.0	1	0	0.006496	0.000897	231152	0.2312	5.5	0.062	7.7	7.4	11.5		25	6	2.0	1.06	0.68	0	0 /16	0.00	47	14 /16	4.04
02/27/13	8	00	TR	112514	0.2300	2.8867	*	2.8867	621.9	0.0	580.5	0.0	1	0	0.006496	0.000884	207090	0.2071	8.0	0.082	8.0	7.3	10.6		24	2	2.0	1.19	0.71	0	0 /16	0.00	48	0 /16	2.69
02/28/13	8	00	TR	112744	0.2300	0.0000		0.0000	621.9	0.0	580.5	0.0	0	0	0.000000	0.000885	214590	0.2146	7.4	0.057	7.9	7.3	10.8		22	15	1.9	1.09	0.72	0	0 /16	0.00	48	2 /16	2.69
	TOTALS				7.0970			5.9983		0.8		0.5			0.315108	0.025181		6.8784									45.5					0.00			91.55
	AVG.				0.2535			0.2142		0.0		0.0			0.011254			0.2457	6.1	0.059	7.8	7.5	10	16.5			1.6	0.82	0.70			0.00			3.27

WT. Of PAC plus WT. Of water

OPERATOR'S SIGNATURE:

AVG. NTU	0.06	AVG.PROD. 0.245657
HIGH NTU	0.12	HIGH PROD. 0.378427
LOW NTU	0.04	LOW PROD. 0.103976

* All or some transverse inflow.

Comb. Ph GPM	0.3091
Comb.Turb. GPD	776.0

NORTH YUBA WATER DISTRICT
FORBESTOWN WATER TREATMENT PLANT
OPERATORS RECORD
SYSTEM NO. 58-006
March 2014

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				RAW WATER				AIR SCOUR BLOWERS						FILTERED WATER				TURBIDITY		PH				CHLORINATION-12.5% SODIUM HYPOCHLORITE											
DATE	TIME HR	TIME MIN	OPER INIT	TO PLANT METER	USAGE MG	TO POND METER		FLOW MG	NO.1 METER	NO.1 USE	NO.2 METER	NO.2 USE	F	B W	BACK WASH MG	TEST METERS flow-MG	METER	PRODUC. MG	RAW	TRT	RAW	TRT	WATER TEMP CENT.	ALK.	INCH	16'ths	LB. USE	APPL. MG/L	TRT. RES. PPM	11% SODA ASH INCH	11% SODA ASH 16'S	11% SODA ASH LBS.	ALUM POLYMER BLEND NTU 926 INCH	ALUM POLYMER BLEND NTU 926 16'S	ALUM POLYMER BLEND NTU 926 LBS.
				112744	0.3541	0.0000		0.0000	621.9		580.5						214590								22	15				0	0	0.0	48	2	
03/01/14	8	15	TR	113019	0.2750	0.0000		0.0000	622.0	0.1	580.5	0.0	1	1	0.026284	0.000906	233730	0.2267	7.5	0.079	7.7	7.2	10.3		21	15	1.6	1.27	0.70	0	0 /16	0.00	48	4 /16	2.69
03/02/14	8	15	TR	113229	0.2100	0.0000		0.0000	622.1	0.1	580.5	0.0	1	0	0.006496	0.000874	185600	0.1800	6.1	0.090	7.7	7.3	10.1		21	1	1.4	0.95	0.71	0	0 /16	0.00	48	6 /16	2.69
03/03/14	8	00	TR	113501	0.2720	0.0000		0.0000	622.1	0.0	580.5	0.0	1	0	0.006496	0.000898	245240	0.2379	6.4	0.068	7.7	7.2	10.3	13.8	19	15	1.8	0.93	0.72	0	0 /16	0.00	48	8 /16	2.69
03/04/14	8	15	DB	113728	0.2270	0.0000		0.0000	622.1	0.0	580.6	0.1	1	1	0.026284	0.000904	217977	0.2114	6.1	0.058	7.6	7.3	10.4		19	1	1.4	0.81	0.72	0	0 /16	0.00	48	10 /16	2.69
03/05/14	8	00	DB	113963	0.2350	0.0000		0.0000	622.1	0.0	580.7	0.1	1	0	0.006496	0.000885	245451	0.2381	5.8	0.041	7.6	7.3	11.9		18	3	1.9	0.96	0.70	0	0 /16	0.00	48	12 /16	2.69
03/06/14	8	00	DB	114222	0.2590	0.0000		0.0000	622.1	0.0	580.7	0.0	1	0	0.006496	0.000902	256359	0.2435	7.4	0.043	7.5	7.3	11.7		17	0	1.9	0.96	0.70	0	0 /16	0.00	48	15 /16	4.04
03/07/14	8	00	DB	114469	0.2470	0.7210	*	0.7210	622.1	0.0	580.8	0.1	1	1	0.026284	0.000904	249941	0.2374	5.8	0.035	7.7	7.2	11.0		15	15	1.7	0.88	0.70	0	0 /16	0.00	49	2 /16	4.04
03/08/14	8	00	DB	114692	0.2230	0.2054	*	0.2054	622.1	0.0	580.8	0.0	1	1	0.026284	0.000897	241887	0.2298	7.7	0.042	7.7	7.3	11.4		15	1	1.5	0.78	0.69	0	0 /16	0.00	49	4 /16	2.69
03/09/14	8	00	DB	114877	0.1850	0.0000		0.0000	622.1	0.0	580.9	0.1	1	0	0.006496	0.000869	186916	0.1776	5.4	0.039	7.6	7.3	11.8		14	5	1.2	0.83	0.70	0	0 /16	0.00	49	6 /16	2.69
03/10/14	8	00	DB	115141	0.2640	0.0000		0.0000	622.1	0.0	580.9	0.0	1	0	0.006496	0.000908	269881	0.2564	6.9	0.038	7.6	7.2	11.0	15.1	13	4	1.7	0.81	0.71	0	0 /16	0.00	49	9 /16	4.04
03/11/14	8	25	MB	115483	0.3420	0.0000		0.0000	622.2	0.1	580.9	0.0	1	1	0.026284	0.000934	289062	0.2746	4.9	0.051	7.7	7.3	10.8		11	13	2.4	1.03	0.71	0	0 /16	0.00	49	12 /16	4.04
03/12/14	8	15	MB	115745	0.2620	0.0000		0.0000	622.3	0.1	580.9	0.0	1	1	0.026284	0.000900	236829	0.2250	5.1	0.067	7.8	7.3	11.2		10	11	1.8	0.98	0.73	0	0 /16	0.00	49	15 /16	4.04
03/13/14	8	14	MB	116015	0.2700	0.0000		0.0000	622.4	0.0	581.0	0.1	1	1	0.026284	0.000908	227664	0.2163	4.8	0.065	7.9	7.4	11.7		9	9	1.8	1.02	0.69	0	0 /16	0.00	50	1 /16	2.69
03/14/14	7	55	MB	116377	0.3620	0.0000		0.0000	622.5	0.1	581.2	0.2	1	1	0.026284	0.000952	318724	0.3028	4.8	0.050	8.0	7.5	11.8		7	14	2.8	1.09	0.75	0	0 /16	0.00	50	4 /16	4.04
03/15/14	7	53	MB	116528	0.1510	0.0000		0.0000	622.5	0.0	581.2	0.0	1	0	0.006496	0.000846	140046	0.1330	4.4	0.087	7.9	7.5	12.0		7	1	1.0	0.90	0.68	0	0 /16	0.00	50	6 /16	2.69
03/16/14	7	50	MB	116815	0.2870	0.0000		0.0000	622.6	0.1	581.2	0.0	1	0	0.006496	0.000934	270544	0.2570	4.1	0.039	8.0	7.6	12.3		5	9	2.1	0.98	0.63	0	0 /16	0.00	50	9 /16	4.04
03/17/14	8	00	MB	117108	0.2930	0.0000		0.0000	622.7	0.1	581.2	0.0	1	0	0.006496	0.001225	276739	0.2629	3.5	0.084	8.3	7.6	12.6	13.9	3	15	2.1	0.96	0.65	0	0 /16	0.00	51	3 /16	13.46
03/18/14	8	00	JD	117426	0.3180	0.0000		0.0000	622.7	0.0	581.3	0.1	0	2	0.039576	0.000930	296273	0.2815	3.9	0.068	8.1	7.6	13.5		34	8	2.3	0.98	0.70	0	0 /16	0.00	51	6 /16	4.04
03/19/14	8	10	JD	117603	0.1770	0.0000		0.0000	622.7	0.0	581.4	0.1	1	0	0.006496	0.000858	186998	0.1776	4.0	0.082	7.9	7.6	13.6		33	4	2.0	1.38	0.69	0	0 /16	0.00	51	8 /16	4.04
03/20/14	8	10	JD	117918	0.3150	0.0000		0.0000	622.7	0.0	581.4	0.0	1	0	0.006496	0.000923	326975	0.3106	3.8	0.048	8.0	7.6	13.8		31	6	3.1	1.19	0.69	0	0 /16	0.00	51	11 /16	4.04
03/21/14	8	07	MB	118182	0.2640	0.0000		0.0000	622.7	0.0	581.5	0.1	0	1	0.019788	0.000900	254295	0.2416	3.7	0.068	7.9	7.6	14.1		29	15	2.4	1.17	0.72	0	0 /16	0.00	51	14 /16	4.04
03/22/14	9	10	JD	118480	0.2980	0.0000		0.0000	622.7	0.0	581.6	0.1	1	0	0.006496	0.000919	315921	0.3001	3.5	0.057	7.9	7.7	14.2		28	3	2.9	1.14	0.72	0	0 /16	0.00	52	2 /16	5.39
03/23/14	9	35	JD	118905	0.4250	0.0000		0.0000	622.7	0.0	581.6	0.0	1	0	0.006496	0.000974	441349	0.4193	3.3	0.047	7.8	7.8	14.6		26	4	3.2	0.91	0.70	0	0 /16	0.00	52	6 /16	5.39
03/24/14	8	10	JD	119183	0.2780	0.0000		0.0000	622.7	0.0	581.7	0.1	1	1	0.026284	0.000911	277554	0.2637	3.0	0.058	7.9	7.8	14.6	14.5	25	0	2.0	0.93	0.70	0	0 /16	0.00	52	9 /16	4.04
03/25/14	8	00	MB	119419	0.2360	0.0000		0.0000	622.7	0.0	581.7	0.0	0	0	0.000000	0.000878	211608	0.2010	6.9	0.057	7.7	7.7	14.0		24	0	1.6	0.98	0.66	0	0 /16	0.00	52	11 /16	2.69
03/26/14	8	00	KM	119681	0.2620	1.7255	*	1.7255	622.7	0.0	581.7	0.0	1	2	0.046072	0.000908	202919	0.1928	4.0	0.079	8.0	7.6	12.8		22	14	1.8	1.15	0.70	0	0 /16	0.00	52	13 /16	5.49
03/27/14	8	00	KM	119986	0.3050	2.5601	*	2.5601	622.9	0.2	581.7	0.0	1	1	0.026284	0.000919	279821	0.2658	5.6	0.055	7.9	7.5	11.6		21	7	2.4	1.06	0.68	0	0 /16	0.00	53	3 /16	2.69
03/28/14	8	00	KM	120189	0.2030	0.7959	*	0.7959	622.9	0.0	581.7	0.0	0	0	0.000000	0.000869	184603	0.1754	4.7	0.022	7.9	7.4	11.8		20	8	1.5	1.05	0.72	0	0 /16	0.00	53	6 /16	4.04
03/29/14	7	45	KM	120520	0.3310	0.0000		0.0000	623.0	0.1	581.7	0.0	1	1	0.026284	0.000930	298901	0.2840	5.6	0.048	7.9	7.4	11.6		19	4	2.0	0.86	0.74	0	0 /16	0.00	53	10 /16	5.39
03/30/14	7	45	KM	120827	0.3070	0.0000		0.0000	623.1	0.1	581.7	0.0	1	1	0.026284	0.000919	265767	0.2525	4.6	0.054	7.7	7.4	11.7		17	15	2.1	1.02	0.73	0	0 /16	0.00	53	12 /16	2.69
03/31/14	8	00	KM	121092	0.2650	0.0000		0.0000	623.1	0.0	581.7	0.0	1	0	0.006496	0.000898	237576	0.2257	4.9	0.590	7.7	7.5	12.1		16	14	1.7	0.92	0.59	0	0 /16	0.00	53	13 /16	4.04
	TOTALS				8.3480			6.0079		1.1		1.2			0.511788	0.028381		7.5021									61.6					0.00			123.97
	AVG.				0.2693			0.1938		0.0		0.0			0.016509			0.2420	5.1	0.074	7.8	7.5	12	14.3			2.0	1.00	0.70			0.00			4.00

OPERATOR'S SIGNATURE: _____

* All or some transverse inflow.

AVG. NTU	0.07	AVG.PROD.	0.242002
HIGH NTU	0.59	HIGH PROD.	0.419282
LOW NTU	0.02	LOW PROD.	0.133044
Comb. Ph GPM	0.3091		
Comb.Turb. GPD	776.0		

WT. Of PAC plus WT. Of water

NORTH YUBA WATER DISTRICT
FORBESTOWN WATER TREATMENT PLANT
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				RAW WATER				AIR SCOUR BLOWERS						FILTERED WATER				TURBIDITY		PH				CHLORINATION-12.5% SODIUM HYPOCHLORITE											
	TIME		OPER	TO PLANT	USAGE	TO POND		FLOW	NO.1	NO.1	NO.2	NO.2		B	BACK WASH	TEST METERS	METER	PRODUC.	RAW	TRT	RAW	TRT	WATER TEMP	ALK.			LB.	APPL.	TRT. RES.	11% SODA ASH			ALUM POLYMER BLEND NTU 926		
DATE	HR	MIN	INIT	METER	MG	METER		MG	METER	USE	METER	USE	F	W	MG	flow-MG		MG					CENT.			INCH	16'ths	USE	MG/L	PPM	INCH	16'S	LBS.	INCH	16'S	LBS.
				121092	0.3541	0.0000		0.0000	623.1		581.7						237576									16	14				0	0	0.0	53	13	
04/01/14	8	00	TR	121212	0.1200	1.5222	*	1.5222	623.1	0.0	581.8	0.1	0	1	0.019788	0.000832	115680	0.1122	5.7	0.092	7.6	7.4	10.0			16	7	1.7	1.27	0.70	0	0 /16	0.00	54	0 /16	4.04
04/02/14	8	00	TR	121555	0.3430	0.3660	*	0.3660	623.1	0.0	581.8	0.0	1	0	0.006496	0.000935	352842	0.3423	8.3	0.049	7.7	7.4	9.9			15	0	2.4	0.82	0.69	0	0 /16	0.00	54	3 /16	4.04
04/03/14	8	01	MB	121913	0.3580	0.1220	*	0.1220	623.1	0.0	581.9	0.1	1	0	0.006496	0.000939	359665	0.3489	11.9	0.064	7.8	7.5	10.1			13	9	2.4	0.81	0.69	0	0 /16	0.00	54	7 /16	5.39
04/04/14	8	00	TR	122054	0.1410	0.0000		0.0000	623.1	0.0	581.9	0.0	0	1	0.019788	0.000845	146156	0.1418	8.3	0.066	7.8	7.5	10.9			12	14	1.1	0.95	0.69	0	0 /16	0.00	54	9 /16	2.69
04/05/14	8	15	TR	122430	0.3760	0.0000		0.0000	623.1	0.0	582.0	0.1	1	0	0.006496	0.000948	390674	0.3790	8.3	0.043	7.8	7.5	10.9			11	3	1.9	0.60	0.69	0	0 /16	0.00	54	12 /16	4.04
04/06/14	8	00	TR	122660	0.2300	0.9509	*	0.9509	623.1	0.0	582.0	0.0	1	0	0.006496	0.000882	233355	0.2217	9.5	0.040	7.8	7.6	10.8			10	2	1.7	0.94	0.69	0	0 /16	0.00	54	15 /16	4.04
04/07/14	8	15	TR	122857	0.1970	0.7532	*	0.7532	623.1	0.0	582.0	0.0	0	0	0.000000	0.000867	204054	0.1939	6.8	0.059	7.8	7.5	11.9	14.9		9	3	1.5	0.95	0.70	0	0 /16	0.00	55	1 /16	2.69
04/08/14	8	39	MB	123183	0.3260	0.5538	*	0.5538	623.2	0.1	582.0	0.0	0	1	0.019788	0.000923	290661	0.2761	12.5	0.041	8.2	7.6	12.3			7	13	3.1	1.35	0.70	0	0 /16	0.00	55	4 /16	4.04
04/09/14	8	10	MB	123541	0.3580	0.3849	*	0.3849	623.3	0.1	582.0	0.0	1	0	0.006496	0.000937	313144	0.2975	8.7	0.046	8.0	7.8	13.0			6	8	2.1	0.87	0.71	0	0 /16	0.00	55	8 /16	5.39
04/10/14	8	00	JD	123805	0.2640	0.2535	*	0.2535	623.3	0.0	582.0	0.0	1	0	0.006496	0.000897	248747	0.2363	5.0	0.037	7.8	7.8	13.1			33	0	1.8	0.91	0.70	0	0 /16	0.00	55	11 /16	4.04
04/11/14	8	10	MB	124061	0.2560	0.1109	*	0.1109	623.4	0.1	582.0	0.0	1	1	0.026284	0.000893	218157	0.2072	6.4	0.060	8.0	7.8	14.7			31	14	1.8	1.07	0.72	0	0 /16	0.00	55	13 /16	2.69
04/12/14	7	37	MB	124525	0.4640	0.0127	*	0.0127	623.5	0.1	582.0	0.0	1	0	0.006496	0.000991	421180	0.4001	7.9	0.038	4.7	7.8	15.4			29	12	3.5	1.04	0.70	0	0 /16	0.00	55	15 /16	2.69
04/13/14	7	35	MB	124945	0.4200	0.0134	*	0.0134	623.6	0.1	582.0	0.0	1	1	0.026284	0.000976	361262	0.3432	10.7	0.050	8.4	8.1	13.1			27	10	3.5	1.22	0.69	0	0 /16	0.00	56	2 /16	4.04
04/14/14	8	15	MB	125285	0.3400	0.0000		0.0000	623.6	0.0	582.0	0.0	1	0	0.006496	0.000934	296134	0.2813	8.2	0.066	8.4	7.8	14.0	13.5		25	14	2.9	1.22	0.71	0	0 /16	0.00	55	3 /16	6.73
04/15/14	8	30	DB	125705	0.4200	1.0080	*	1.0080	623.6	0.0	582.1	0.1	1	0	0.006496	0.000976	442120	0.4200	8.0	0.047	8.4	8.1	14.5			23	12	3.0	0.86	0.69	0	0 /16	0.00	55	8 /16	6.73
04/16/14	8	30	DB	126134	0.4290	0.0000		0.0000	623.6	0.0	582.2	0.1	1	1	0.026284	0.000973	437985	0.4161	4.4	0.048	8.2	8.2	15.2			21	9	3.6	1.03	0.69	0	0 /16	0.00	55	13 /16	6.73
04/17/14	8	00	DB	126654	0.5200	0.0000		0.0000	623.6	0.0	582.3	0.1	2	1	0.032780	0.001019	523009	0.4969	4.3	0.048	8.2	8.2	15.4			19	0	5.6	1.35	0.71	0	0 /16	0.00	39	12 /16	8.08
04/18/14	8	00	DB	126971	0.3170	0.0000		0.0000	623.6	0.0	582.4	0.1	0	0	0.000000	0.000917	322263	0.3061	4.6	0.045	8.2	8.2	16.4			17	6	2.7	1.04	0.70	0	0 /16	0.00	39	15 /16	4.04
04/19/14	8	00	DB	127287	0.3160	0.7814	*	0.7814	623.6	0.0	582.5	0.1	1	1	0.026284	0.000928	317299	0.3014	4.2	0.052	8.1	8.1	16.9			16	0	2.3	0.90	0.70	0	0 /16	0.00	40	3 /16	4.04
04/20/14	9	15	JD	127793	0.5060	0.8284	*	0.8284	623.6	0.0	582.5	0.0	1	0	0.006496	0.001025	525537	0.4993	3.5	0.035	7.8	7.9	16.8			13	13	3.6	0.86	0.70	0	0 /16	0.00	40	10 /16	9.42
04/21/14	8	00	DB	128038	0.2450	0.7336	*	0.7336	623.6	0.0	582.6	0.1	1	0	0.006496	0.000885	251275	0.2387	3.8	0.036	7.7	7.8	11.1	15.0		12	12	1.7	0.87	0.70	0	0 /16	0.00	40	14 /16	5.39
04/22/14	8	15	JD	128498	0.4600	0.0604	*	0.0604	623.7	0.1	582.6	0.0	1	1	0.026284	0.001002	409855	0.3894	3.9	0.033	7.9	7.9	16.8			10	13	3.2	0.98	0.69	0	0 /16	0.00	41	4 /16	8.08
04/23/14	8	10	JD	128703	0.2050	0.4252	*	0.4252	623.8	0.1	582.6	0.0	1	0	0.006496	0.000880	189008	0.1796	2.8	0.032	7.9	7.7	16.0			10	0	1.3	0.89	0.72	0	0 /16	0.00	41	7 /16	4.04
04/24/14	8	50	JD	129138	0.4350	0.0000		0.0000	623.9	0.1	582.6	0.0	0	1	0.019788	0.001006	394640	0.3749	2.3	0.034	8.0	7.9	16.7			8	3	3.0	0.95	0.69	0	0 /16	0.00	41	13 /16	8.08
04/25/14	8	20	JD	129366	0.2280	0.0000		0.0000	623.9	0.0	582.6	0.0	1	0	0.006496	0.000891	204755	0.1945	2.7	0.033	8.0	7.9	16.8			7	3	1.6	1.01	0.71	0	0 /16	0.00	42	0 /16	4.04
04/26/14	8	45	JD	129715	0.3490	0.5215	*	0.5215	624.0	0.1	582.6	0.0	1	0	0.006496	0.000945	318475	0.3026	2.7	0.034	8.0	7.9	15.0			5	10	2.6	1.01	0.69	0	0 /16	0.00	42	5 /16	6.73
04/27/14	8	00	JD	130059	0.3440	0.7600	*	0.7600	624.1	0.1	582.6	0.0	1	1	0.026284	0.000935	305086	0.2898	2.8	0.036	8.1	7.9	14.6			4	0	2.7	1.10	0.70	0	0 /16	0.00	42	11 /16	2.69
04/28/14	8	00	JD	130417	0.3580	0.8487	*	0.8487	624.1	0.0	582.6	0.0	1	0	0.006496	0.000948	329168	0.3127	2.1	0.034	7.9	7.9	14.8	16.8		2	3	3.0	1.14	0.69	0	0 /16	0.00	42	14 /16	4.04
04/29/14	7	55	KM	130621	0.2040	0.8488	*	0.8488	624.2	0.1	582.6	0.0	0	1	0.019788	0.000863	189590	0.1801	2.2	0.037	7.9	7.9	14.8			33	1	1.3	0.87	0.72	0	0 /16	0.00	43	1 /16	4.04
04/30/14	7	55	KM	131146	0.5250	0.0000		0.0000	624.2	0.0	582.6	0.0	0	0	0.000000	0.001023	554336	0.5266	2.2	0.036	7.9	7.9	15.4			30	13	3.7	0.84	0.69	0	0 /16	0.00	43	7 /16	8.08
	TOTALS				10.0540			11.8595		1.1		0.9			0.386864	0.028015		9.2101										76.1					0.00			150.78
	AVG.				0.3351			0.3953		0.0		0.0			0.012895			0.3070	5.8	0.046	7.9	7.8	14	15.1				2.5	0.99	0.70			0.00			5.03

OPERATOR'S SIGNATURE:

AVG. NTU	0.05	AVG.PROD.	0.307004
HIGH NTU	0.09	HIGH PROD.	0.526619
LOW NTU	0.03	LOW PROD.	0.11221

WT. Of PAC plus WT. Of water

* All or some transverse inflow.

Comb. Ph GPM	0.3091
Comb.Turb. GPD	776.0

NORTH YUBA WATER DISTRICT
FORBESTOWN WATER TREATMENT PLANT
OPERATORS RECORD
SYSTEM NO. 58-006
May 2014

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				RAW WATER				AIR SCOUR BLOWERS				FILTERED WATER										CHLORINATION-12.5% SODIUM HYPOCHLORITE											
	TIME		OPER													TURBIDITY		PH						LB.	APPL.	TRT.	11% SODA ASH			ALUM POLYMER BLEND		
													BACK	TEST						WATER					RES.				NTU 926		
DATE	HR	MIN	INIT	TO PLANT METER	USAGE MG	TO POND METER		FLOW MG	NO.1 METER	NO.1 USE	NO.2 METER	NO.2 USE	F	B W	WASH MG	METERS flow-MG	METER	PRODUC. MG	RAW	TRT	RAW	TRT	TEMP CENT.	ALK.	INCH	16'ths	USE	MG/L	PPM	INCH	16'S	LBS.	INCH	16'S	LBS.
				131146	0.3541	0.0000		0.0000	624.1		582.7						554336							30	13				0	0	0.0	43	7	
05/01/14	8	00	KM	131441	0.2950	0.0000		0.0000	624.1	0.0	582.8	0.1	1	1	0.026284	0.000910	298180	0.2892	2.0	0.041	8.3	7.9	16.8		29	5	2.9	1.27	0.72	0	0 /16	0.00	43	11 /16	5.39
05/02/14	7	45	KM	131950	0.5090	0.0000		0.0000	624.1	0.0	582.9	0.1	1	0	0.006496	0.001006	525260	0.5095	1.7	0.035	7.9	8.0	16.8		26	13	4.1	0.96	0.68	0	0 /16	0.00	44	2 /16	9.42
05/03/14	7	30	KM	132288	0.3380	0.2859	*	0.2859	624.1	0.0	582.9	0.0	1	0	0.006496	0.000926	347778	0.3373	2.0	0.031	8.1	8.0	17.8		25	5	2.5	0.87	0.70	0	0 /16	0.00	46	5 /16	6.24
05/04/14	7	00	KM	132794	0.5060	0.3644	*	0.3644	624.1	0.0	583.1	0.2	1	1	0.026284	0.001015	511406	0.4961	2.0	0.037	7.8	8.0	17.2		23	1	3.7	0.89	0.70	0	0 /16	0.00	46	11 /16	8.08
05/05/14	8	00	KM	133132	0.3380	0.3939	*	0.3939	624.1	0.0	583.1	0.0	1	0	0.006496	0.000932	348676	0.3382	1.6	0.036	8.3	8.0	17.3	16.0	21	6	1.9	0.67	0.69	0	0 /16	0.00	47	0 /16	6.73
05/06/14	8	00	TR	133636	0.5040	0.3394	*	0.3394	624.1	0.0	583.2	0.1	1	1	0.026284	0.001023	512462	0.4868	1.9	0.034	8.0	8.1	17.0		18	14	4.1	1.01	0.70	0	0 /16	0.00	47	7 /16	9.42
05/07/14	8	15	MB	134020	0.3840	0.0000		0.0000	624.2	0.1	583.2	0.0	1	0	0.006496	0.000941	343260	0.3261	1.6	0.038	8.5	8.1	17.2		17	1	3.0	1.09	0.70	0	0 /16	0.00	47	13 /16	8.08
05/08/14	8	00	TR	134420	0.4000	0.0000		0.0000	624.2	0.0	583.2	0.0	1	0	0.006496	0.000956	364770	0.3465	1.7	0.036	8.4	8.2	17.8		14	14	3.1	1.07	0.69	0	0 /16	0.00	48	2 /16	6.73
05/09/14	8	00	TR	134761	0.3410	0.1623	*	0.1623	624.4	0.2	583.2	0.0	1	2	0.046072	0.000939	304459	0.2892	3.2	0.038	8.4	8.2	17.1		13	3	2.8	1.15	0.69	0	0 /16	0.00	48	6 /16	5.39
05/10/14	8	15	TR	135162	0.4010	0.1830	*	0.1830	624.4	0.0	583.2	0.0	1	0	0.006496	0.000967	348775	0.3313	1.8	0.036	8.3	8.2	17.3		11	3	3.3	1.19	0.69	0	0 /16	0.00	48	12 /16	8.08
05/11/14	8	15	TR	135433	0.2710	0.1145	*	0.1145	624.5	0.1	583.2	0.0	1	0	0.006496	0.000898	238795	0.2269	1.7	0.047	8.4	8.3	16.9		9	11	2.5	1.30	0.70	0	0 /16	0.00	48	15 /16	4.04
05/12/14	8	00	TR	135932	0.4990	0.0813	*	0.0813	624.6	0.1	583.2	0.0	1	1	0.026284	0.001017	450634	0.4281	1.7	0.038	8.4	8.3	17.0	15.2	7	5	3.9	1.09	0.69	0	0 /16	0.00	49	5 /16	8.08
05/13/14	8	00	TR	136321	0.3890	0.3326	*	0.3326	624.6	0.0	583.2	0.0	1	1	0.026284	0.000958	388400	0.3690	1.7	0.042	8.5	8.2	17.9		5	7	3.1	1.00	0.69	0	0 /16	0.00	49	11 /16	8.08
05/14/14	8	00	TR	136811	0.4900	0.4055	*	0.4055	624.6	0.0	583.3	0.1	1	0	0.006496	0.000997	508700	0.4833	1.8	0.044	8.5	8.4	18.3		25	11	4.2	1.04	0.70	0	0 /16	0.00	50	2 /16	9.42
05/15/14	8	00	MB	137331	0.5200	0.3255	*	0.3255	624.6	0.0	583.5	0.2	1	1	0.026284	0.001008	497933	0.4730	3.3	0.036	8.8	8.5	19.8		23	0	3.0	0.76	0.70	0	0 /16	0.00	50	7 /16	6.73
05/16/14	8	15	MB	137806	0.4750	0.6323	*	0.6323	624.6	0.0	583.5	0.0	1	0	0.006496	0.000989	489721	0.4652	2.5	0.034	8.0	8.4	11.7		20	8	4.1	1.06	0.70	0	0 /16	0.00	50	14 /16	9.42
05/17/14	7	45	MB	138325	0.5190	0.6391	*	0.6391	624.6	0.0	583.7	0.2	1	1	0.026284	0.001017	520731	0.4947	1.8	0.036	8.5	8.4	19.3		17	14	5.6	1.36	0.72	0	0 /16	0.00	51	6 /16	10.77
05/18/14	7	30	MB	138767	0.4420	0.6514	*	0.6514	624.6	0.0	583.7	0.0	2	0	0.012992	0.000973	440992	0.4189	2.1	0.048	8.5	8.4	19.1		15	9	3.8	1.08	0.70	0	0 /16	0.00	51	12 /16	8.08
05/19/14	8	15	MB	139237	0.4700	0.6798	*	0.6798	624.6	0.0	583.8	0.1	0	1	0.019788	0.000993	463995	0.4408	2.1	0.055	8.6	8.3	18.6	15.3	13	2	4.0	1.09	0.70	0	0 /16	0.00	52	3 /16	4.04
05/20/14	8	00	DB	139673	0.4360	0.6445	*	0.6445	624.7	0.1	583.8	0.0	1	1	0.026284	0.000980	399289	0.3793	2.3	0.044	8.3	8.3	18.3		10	12	3.9	1.23	0.71	0	0 /16	0.00	52	9 /16	8.08
05/21/14	8	00	DB	139984	0.3110	0.7302	*	0.7302	624.7	0.0	583.8	0.0	1	0	0.006496	0.000915	272831	0.2592	3.5	0.035	8.0	8.3	17.4		9	0	2.9	1.33	0.71	0	0 /16	0.00	52	12 /16	4.04
05/22/14	8	00	DB	140492	0.5080	0.8982	*	0.8982	624.8	0.1	583.8	0.0	1	1	0.026284	0.001039	460473	0.4374	2.7	0.033	7.6	8.2	17.6		6	2	4.7	1.29	0.70	0	0 /16	0.00	53	4 /16	10.77
05/23/14	8	00	DB	140883	0.3910	0.5445	*	0.5445	624.9	0.1	583.8	0.0	2	0	0.012992	0.000965	337613	0.3207	20.4	0.039	7.5	7.7	12.0		3	9	4.2	1.57	0.73	0	0 /16	0.00	53	8 /16	5.39
05/24/14	8	00	DB	141466	0.5830	0.3426	*	0.3426	625.0	0.1	583.8	0.0	2	1	0.032780	0.001071	518154	0.4922	17.8	0.037	7.6	7.6	12.6		33	15	5.6	1.36	0.72	0	0 /16	0.00	53	14 /16	8.08
05/25/14	8	00	DB	141870	0.4040	0.5373	*	0.5373	625.1	0.1	583.8	0.0	1	0	0.006496	0.000961	371373	0.3528	18.5	0.035	7.5	7.6	12.7		32	2	3.0	1.01	0.72	0	0 /16	0.00	54	3 /16	6.73
05/26/14	8	00	DB	142513	0.6430	0.5910	*	0.5910	625.2	0.1	583.8	0.0	1	1	0.026284	0.001060	558550	0.5306	2.5	0.037	7.9	8.2	19.9		28	14	5.3	1.20	0.70	0	0 /16	0.00	54	9 /16	8.08
05/27/14	8	15	MB	142905	0.3920	0.6598	*	0.6598	625.3	0.1	583.8	0.0	1	0	0.006496	0.000952	361402	0.3433	2.4	0.065	8.2	8.3	20.0	11.6	26	13	3.4	1.18	0.72	0	0 /16	0.00	54	15 /16	6.73
05/28/14	8	15	MB	143531	0.6260	1.0757	*	1.0757	625.3	0.0	584.0	0.2	1	1	0.026284	0.001050	630741	0.5992	2.3	0.037	8.3	8.3	19.7		23	12	5.0	1.00	0.70	0	0 /16	0.00	55	9 /16	13.46
05/29/14	8	25	JD	144126	0.5950	0.0000		0.0000	625.3	0.0	584.1	0.1	2	1	0.032780	0.001058	595725	0.5659	2.0	0.039	8.3	8.4	20.2		21	0	4.5	0.95	0.69	0	0 /16	0.00	56	1 /16	10.77
05/30/14	8	15	JD	144815	0.6890	0.6385	*	0.6385	625.3	0.0	584.2	0.1	2	0	0.012992	0.001091	707294	0.6719	2.3	0.039	8.2	8.4	19.6		17	12	5.3	0.95	0.70	0	0 /16	0.00	38	13 /16	13.46
05/31/14	9	40	JD	145447	0.6320	0.7649	*	0.7649	625.3	0.0	584.4	0.2	2	1	0.032780	0.001069	636942	0.6051	2.4	0.041	8.1	8.4	19.6		14	14	4.7	0.93	0.69	0	0 /16	0.00	39	5 /16	4.04
	TOTALS				14.3010			13.0181		1.2		1.7			0.570252	0.030677		13.1082									117.8					0.00			241.84
	AVG.				0.4613			0.4199		0.0		0.1			0.018395			0.4228	3.8	0.039	8.2	8.2	17	14.5			3.8	1.10	0.70			0.00			7.80

OPERATOR'S SIGNATURE:

AVG. NTU	0.04	AVG.PROD.	0.422844
HIGH NTU	0.07	HIGH PROD.	0.671929
LOW NTU	0.03	LOW PROD.	0.226855

* All or some transverse inflow.

Comb. Ph GPM	0.3091
Comb.Turb. GPD	776.0

WT. Of PAC plus WT. Of water

NORTH YUBA WATER DISTRICT
FORBESTOWN WATER TREATMENT PLANT
OPERATORS RECORD
SYSTEM NO. 58-006
June 2014

NORTH YUBA WATER DISTRICT
FORBESTOWN WATER TREATMENT PLANT
OPERATORS RECORD
SYSTEM NO. 58-006
June 2014

				RAW WATER				AIR SCOUR BLOWERS						FILTERED WATER				TURBIDITY		PH				CHLORINATION-12.5% SODIUM HYPOCHLORITE											
	TIME		OPER	TO PLANT	USAGE	TO POND		FLOW	NO.1	NO.1	NO.2	NO.2		BACK WASH	TEST METERS	METER	PRODUC.	RAW	TRT	RAW	TRT	WATER TEMP	ALK.			LB.	APPL.	TRT. RES.	POLYMER	11% SODA ASH			ALUM POLYMER BLEND NTU 926		
DATE	HR	MIN	INIT	METER	MG	METER		MG	METER	USE	METER	USE	F W	MG	flow-MG		MG					CENT.			INCH	16'ths	USE	MG/L	PPM	LBS.	INCH	16'S	LBS.	INCH	16'S	LBS.
				935272	0.3541	1.1073		1.1073	603.3		562.2					237787									7	7					0	0	0.0	47	2	
06/01/14					-935.2720		*	0.0000		-603.3		-562.2		0.000000	(1.939443)		0.0000								5.2	1.27						/16	0.00		/16	-1015.11
06/02/14					0.0000		*	0.0000		0.0		0.0		0.000000	0.000776		0.0000								0.0	#DIV/0!						/16	0.00		/16	0.00
06/03/14					0.0000		*	0.0000		0.0		0.0		0.000000	0.000776		0.0000								0.0	#DIV/0!						/16	0.00		/16	0.00
06/04/14					0.0000		*	0.0000		0.0		0.0		0.000000	0.000776		0.0000								0.0	#DIV/0!						/16	0.00		/16	0.00
06/05/14					0.0000		*	0.0000		0.0		0.0		0.000000	0.000776		0.0000								1.9	#DIV/0!						/16	0.00		/16	0.00
06/06/14					0.0000		*	0.0000		0.0		0.0		0.000000	0.000776		0.0000								0.0	#DIV/0!						/16	0.00		/16	0.00
06/07/14					0.0000		*	0.0000		0.0		0.0		0.000000	0.000776		0.0000								0.0	#DIV/0!						/16	0.00		/16	0.00
06/08/14					0.0000		*	0.0000		0.0		0.0		0.000000	0.000776		0.0000								3.1	#DIV/0!						/16	0.00		/16	0.00
06/09/14					0.0000		*	0.0000		0.0		0.0		0.000000	0.000776		0.0000								0.0	#DIV/0!						/16	0.00		/16	0.00
06/10/14					0.0000		*	0.0000		0.0		0.0		0.000000	0.000776		0.0000								0.0	#DIV/0!						/16	0.00		/16	0.00
06/11/14					0.0000		*	0.0000		0.0		0.0		0.000000	0.000776		0.0000								0.0	#DIV/0!						/16	0.00		/16	0.00
06/12/14					0.0000		*	0.0000		0.1		0.0		0.000000	0.000776		0.0000								0.0	#DIV/0!						/16	0.00		/16	0.00
06/13/14					0.0000		*	0.0000		0.0		0.0		0.000000	0.000776		0.0000								0.0	#DIV/0!						/16	0.00		/16	0.00
06/14/14					0.0000		*	0.0000		0.0		0.0		0.000000	0.000776		0.0000								0.0	#DIV/0!						/16	0.00		/16	0.00
06/15/14					0.0000		*	0.0000		0.0		0.0		0.000000	0.000776		0.0000								3.0	#DIV/0!						/16	0.00		/16	0.00
06/16/14					0.0000		*	0.0000		0.0		0.0		0.000000	0.000776		0.0000								0.0	#DIV/0!						/16	0.00		/16	0.00
06/17/14					0.0000		*	0.0000		0.0		0.0		0.000000	0.000776		0.0000								5.6	#DIV/0!						/16	0.00		/16	0.00
06/18/14					0.0000		*	0.0000		0.0		0.0		0.000000	0.000776		0.0000								0.0	#DIV/0!						/16	0.00		/16	0.00
06/19/14					0.0000		*	0.0000		0.0		0.0		0.000000	0.000776		0.0000								0.0	#DIV/0!						/16	0.00		/16	4.04
06/20/14					0.0000		*	0.0000		0.0		0.0		0.000000	0.000776		0.0000								0.0	#DIV/0!						/16	0.00		/16	0.00
06/21/14					0.0000		*	0.0000		0.0		0.0		0.000000	0.000776		0.0000								0.0	#DIV/0!						/16	0.00		/16	0.00
06/22/14					0.0000		*	0.0000		0.0		0.0		0.000000	0.000776		0.0000								0.0	#DIV/0!						/16	0.00		/16	0.00
06/23/14					0.0000		*	0.0000		0.0		0.0		0.000000	0.000776		0.0000								0.0	#DIV/0!						/16	0.00		/16	0.00
06/24/14					0.0000		*	0.0000		0.0		0.0		0.000000	0.000776		0.0000								0.0	#DIV/0!						/16	0.00		/16	0.00
06/25/14					0.0000		*	0.0000		0.0		0.0		0.000000	0.000776		0.0000								0.0	#DIV/0!						/16	0.00		/16	0.00
06/26/14					0.0000		*	0.0000		0.0		0.0		0.000000	0.000776		0.0000								0.0	#DIV/0!						/16	0.00		/16	0.00
06/27/14					0.0000		*	0.0000		0.0		0.0		0.000000	0.000776		0.0000								0.0	#DIV/0!						/16	0.00		/16	2.69
06/28/14					0.0000		*	0.0000		0.0		0.0		0.000000	0.000776		0.0000								0.0	#DIV/0!						/16	0.00		/16	0.00
06/29/14					0.0000		*	0.0000		0.0		0.0		0.000000	0.000776		0.0000								0.0	#DIV/0!						/16	0.00		/16	0.00
06/30/14					0.0000		*	0.0000		0.0		0.0		0.000000	0.000776		0.0000								0.0	#DIV/0!						/16	0.00		/16	0.00
					0.0000		*	0.0000		0.0		0.0		0.000000	0.000776		0.0000								0.0	#DIV/0!						/16	0.00		/16	4.04
	TOTALS				-935.2720			0.0000		-603.2		-562.2		0.000000	-1.916163		0.0000								18.8			0.00				0.00			-1004.34
	AVG.				-30.1701			0.0000		-19.5		-18.1		0.000000			0.0000	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		0.6	#DIV/0!	#DIV/0!	#DIV/0!				0.00			-32.40

WT. Of PAC plus WT. Of water

OPERATOR'S SIGNATURE:

AVG. NTU	#DIV/0!	AVG.PROD.	0
HIGH NTU	0.00	HIGH PROD.	0
LOW NTU	0.00	LOW PROD.	0

* All or some transverse inflow.

Comb. Ph GPM	0.3091
Comb.Turb. GPD	776.0

NORTH YUBA WATER DISTRICT
FORBESTOWN WATER TREATMENT PLANT
OPERATORS RECORD
SYSTEM NO. 58-006
Jul 2014

NORTH YUBA WATER DISTRICT
FORBESTOWN WATER TREATMENT PLANT
OPERATORS RECORD
SYSTEM NO. 58-006
Jul 2014

			RAW WATER				AIR SCOUR BLOWERS						FILTERED WATER				TURBIDITY		PH				CHLORINATION-12.5% SODIUM HYPOCHLORITE										
													BACK	TEST							WATER				LB.	APPL.	TRT.	11% SODA ASH			ALUM POLYMER BLEND		
	TIME	OPER	TO PLANT	USAGE	TO POND	FLOW	NO.1	NO.1	NO.2	NO.2	B		WASH	METERS	METER	PRODUC.	RAW	TRT	RAW	TRT	TEMP	ALK.					RES.				NTU 926		
DATE	HR	MIN INIT	METER	MG	METER	MG	METER	USE	METER	USE	F	W	MG	flow-MG		MG					CENT.		INCH	16'ths	USE	MG/L	PPM	INCH	16'S	LBS.	INCH	16'S	LBS.
			935272	0.3541	1.1073	1.1073	603.3		562.2						237787								7	7				0	0	0.0	47	2	
07/01/14				-935.2720		* 0.0000		-603.3		-562.2			0.000000	(1.939443)		0.0000									5.2	1.27				/16	0.00		/16	-1015.11
07/02/14				0.0000		* 0.0000		0.0		0.0			0.000000	0.000776		0.0000									0.0	#DIV/0!				/16	0.00		/16	0.00
07/03/14				0.0000		* 0.0000		0.0		0.0			0.000000	0.000776		0.0000									0.0	#DIV/0!				/16	0.00		/16	0.00
07/04/14				0.0000		* 0.0000		0.0		0.0			0.000000	0.000776		0.0000									0.0	#DIV/0!				/16	0.00		/16	0.00
07/05/14				0.0000		* 0.0000		0.0		0.0			0.000000	0.000776		0.0000									1.9	#DIV/0!				/16	0.00		/16	0.00
07/06/14				0.0000		* 0.0000		0.0		0.0			0.000000	0.000776		0.0000									0.0	#DIV/0!				/16	0.00		/16	0.00
07/07/14				0.0000		* 0.0000		0.0		0.0			0.000000	0.000776		0.0000									0.0	#DIV/0!				/16	0.00		/16	0.00
07/08/14				0.0000		* 0.0000		0.0		0.0			0.000000	0.000776		0.0000									3.1	#DIV/0!				/16	0.00		/16	0.00
07/09/14				0.0000		* 0.0000		0.0		0.0			0.000000	0.000776		0.0000									0.0	#DIV/0!				/16	0.00		/16	0.00
07/10/14				0.0000		* 0.0000		0.0		0.0			0.000000	0.000776		0.0000									0.0	#DIV/0!				/16	0.00		/16	0.00
07/11/14				0.0000		* 0.0000		0.0		0.0			0.000000	0.000776		0.0000									0.0	#DIV/0!				/16	0.00		/16	0.00
07/12/14				0.0000		* 0.0000		0.1		0.0			0.000000	0.000776		0.0000									0.0	#DIV/0!				/16	0.00		/16	0.00
07/13/14				0.0000		* 0.0000		0.0		0.0			0.000000	0.000776		0.0000									0.0	#DIV/0!				/16	0.00		/16	0.00
07/14/14				0.0000		* 0.0000		0.0		0.0			0.000000	0.000776		0.0000									0.0	#DIV/0!				/16	0.00		/16	0.00
07/15/14				0.0000		* 0.0000		0.0		0.0			0.000000	0.000776		0.0000									3.0	#DIV/0!				/16	0.00		/16	0.00
07/16/14				0.0000		* 0.0000		0.0		0.0			0.000000	0.000776		0.0000									0.0	#DIV/0!				/16	0.00		/16	0.00
07/17/14				0.0000		* 0.0000		0.0		0.0			0.000000	0.000776		0.0000									5.6	#DIV/0!				/16	0.00		/16	0.00
07/18/14				0.0000		* 0.0000		0.0		0.0			0.000000	0.000776		0.0000									0.0	#DIV/0!				/16	0.00		/16	0.00
07/19/14				0.0000		* 0.0000		0.0		0.0			0.000000	0.000776		0.0000									0.0	#DIV/0!				/16	0.00		/16	4.04
07/20/14				0.0000		* 0.0000		0.0		0.0			0.000000	0.000776		0.0000									0.0	#DIV/0!				/16	0.00		/16	0.00
07/21/14				0.0000		* 0.0000		0.0		0.0			0.000000	0.000776		0.0000									0.0	#DIV/0!				/16	0.00		/16	0.00
07/22/14				0.0000		* 0.0000		0.0		0.0			0.000000	0.000776		0.0000									0.0	#DIV/0!				/16	0.00		/16	0.00
07/23/14				0.0000		* 0.0000		0.0		0.0			0.000000	0.000776		0.0000									0.0	#DIV/0!				/16	0.00		/16	0.00
07/24/14				0.0000		* 0.0000		0.0		0.0			0.000000	0.000776		0.0000									0.0	#DIV/0!				/16	0.00		/16	0.00
07/25/14				0.0000		* 0.0000		0.0		0.0			0.000000	0.000776		0.0000									0.0	#DIV/0!				/16	0.00		/16	0.00
07/26/14				0.0000		* 0.0000		0.0		0.0			0.000000	0.000776		0.0000									0.0	#DIV/0!				/16	0.00		/16	0.00
07/27/14				0.0000		* 0.0000		0.0		0.0			0.000000	0.000776		0.0000									0.0	#DIV/0!				/16	0.00		/16	2.69
07/28/14				0.0000		* 0.0000		0.0		0.0			0.000000	0.000776		0.0000									0.0	#DIV/0!				/16	0.00		/16	0.00
07/29/14				0.0000		* 0.0000		0.0		0.0			0.000000	0.000776		0.0000									0.0	#DIV/0!				/16	0.00		/16	0.00
07/30/14				0.0000		* 0.0000		0.0		0.0			0.000000	0.000776		0.0000									0.0	#DIV/0!				/16	0.00		/16	0.00
07/31/14				0.0000		* 0.0000		0.0		0.0			0.000000	0.000776		0.0000									0.0	#DIV/0!				/16	0.00		/16	4.04
	TOTALS			-935.2720		0.0000		-603.2		-562.2			0.000000	-1.916163		0.0000									18.8						0.00			-1004.34
	AVG.			-30.1701		0.0000		-19.5		-18.1			0.000000			0.0000	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!			0.6	#DIV/0!	#DIV/0!				0.00			-32.40

WT. Of PAC plus WT. Of water

OPERATOR'S SIGNATURE:

AVG. NTU #DIV/0!

AVG.PROD. 0

NORTH YUBA WATER DISTRICT
FORBESTOWN WATER TREATMENT PLANT
OPERATORS RECORD
SYSTEM NO. 58-006
Aug 2014

				RAW WATER			AIR SCOUR BLOWERS						FILTERED WATER				TURBIDITY		PH			
	TIME		OPER	TO PLANT	USAGE	TO POND	FLOW	NO.1	NO.1	NO.2	NO.2	B	BACK WASH	TEST METERS	METER	PRODUC.	RAW	TRT	RAW	TRT	WATER TEMP	ALK.
DATE	HR	MIN	INIT	METER	MG	METER	MG	METER	USE	METER	USE	F W	MG	flow-MG		MG					CENT.	
				183951	0.3541	0.2692	0.2692	629.7		588.2					586003							
08/01/14	8	20	JD	184619	0.6680	0.2446	* 0.2446	629.8	0.1	588.2	0.0	2 0	0.012992	0.001104	632745	0.6138	4.5	0.033	7.8	7.7	14.5	
08/02/14	8	00	DB	185222	0.6030	0.1991	* 0.1991	629.9	0.1	588.2	0.0	1 1	0.026284	0.001075	571900	0.5547	5.8	0.034	7.7	7.7	13.8	
08/03/14	8	00	DB	185875	0.6530	0.2593	* 0.2593	630.1	0.2	588.2	0.0	1 1	0.026284	0.001102	611650	0.5933	7.5	0.038	7.8	7.7	14.0	
08/04/14	8	00	DB	186550	0.6750	0.2087	* 0.2087	630.1	0.0	588.2	0.0	2 0	0.012992	0.001115	643566	0.6243	5.0	0.035	7.8	7.7	13.9	
08/05/14	8	05	MB	187120	0.5700	0.3584	* 0.3584	630.1	0.0	588.3	0.1	1 1	0.026284	0.001056	611274	0.5929	6.7	0.237	8.0	7.7	13.0	10.7
08/06/14	8	10	JD	187594	0.4740	0.7828	* 0.7828	630.1	0.0	588.5	0.2	2 1	0.032780	0.001010	497840	0.4729	4.7	0.075	7.8	7.6	13.7	
08/07/14	8	10	JD	188110	0.5160	0.0276	* 0.0276	630.1	0.0	588.5	0.0	1 0	0.006496	0.001021	550530	0.5230	3.3	0.062	8.2	8.2	22.9	
08/08/14	8	07	MB	188642	0.5320	0.7731	* 0.7731	630.1	0.0	588.7	0.2	1 1	0.026284	0.001028	571176	0.5426	3.3	0.046	8.6	8.3	23.1	
08/09/14	7	25	MB	189154	0.5120	0.2557	* 0.2557	630.1	0.0	588.7	0.0	2 0	0.012992	0.001002	546001	0.5187	4.1	0.046	8.4	8.4	23.1	
08/10/14	8	15	MB	189868	0.7140	0.2667	* 0.2667	630.1	0.0	588.9	0.2	1 1	0.026284	0.001110	760500	0.7225	3.8	0.044	8.5	8.4	23.0	
08/11/14	8	10	MB	190302	0.4340	0.2526	* 0.2526	630.1	0.0	588.9	0.0	1 0	0.006496	0.000965	456308	0.4335	4.3	0.063	8.7	8.1	23.1	9.0
08/12/14	8	00	MB	190836	0.5340	0.2484	* 0.2484	630.3	0.1	588.9	0.0	1 1	0.026284	0.001037	498982	0.4740	1.3	0.050	8.7	8.3	22.9	
08/13/14	8	20	MB	191489	0.6530	0.2506	* 0.2506	630.4	0.1	588.9	0.0	1 0	0.006496	0.001099	613011	0.5824	1.5	0.042	8.8	8.5	22.9	
08/14/14	8	15	MB	191986	0.4970	0.2438	* 0.2438	630.5	0.1	588.9	0.0	2 0	0.012992	0.001004	466659	0.4433	1.3	0.057	8.8	8.4	22.7	
08/15/14	8	00	MB	192784	0.7980	0.2466	* 0.2466	630.7	0.2	588.9	0.0	2 1	0.032780	0.001093	736382	0.6996	1.1	0.052	7.7	8.5	22.9	
08/16/14	8	45	KM	193162	0.3780	0.3339	* 0.3339	630.7	0.0	588.9	0.0	1 0	0.006496	0.000967	365669	0.3474	1.2	0.052	8.7	8.5	23.2	
08/17/14	7	50	KM	193772	0.6100	0.3198	* 0.3198	630.9	0.2	588.9	0.0	2 1	0.032780	0.001082	560561	0.5325	1.3	0.041	8.7	8.4	23.0	
08/18/14	8	10	JD	194451	0.6790	0.3364	* 0.3364	631.0	0.1	588.9	0.0	2 1	0.032780	0.001101	622635	0.5915	1.2	0.037	8.7	8.5	22.8	11.1
08/19/14	9	00	TR	195082	0.6310	0.3008	* 0.3008	631.1	0.1	588.9	0.0	2 0	0.012992	0.001065	617790	0.5869	1.5	0.042	8.9	8.5	22.6	
08/20/14	8	30	DB	195529	0.4470	0.2722	* 0.2722	631.2	0.1	588.9	0.0	2 1	0.032780	0.000974	403973	0.3838	3.8	0.060	8.8	8.4	22.6	
08/21/14	8	30	TR	196145	0.6160	0.2954	* 0.2954	631.4	0.2	588.9	0.0	2 0	0.012992	0.001062	587790	0.5584	2.5	0.097	8.7	8.5	22.2	
08/22/14	8	00	TR	196777	0.6320	0.7010	* 0.7010	631.5	0.1	588.9	0.0	2 2	0.052568	0.001075	571659	0.5431	6.0	0.036	8.2	8.5	13.9	
08/23/14	8	15	TR	197450	0.6730	0.3769	* 0.3769	631.6	0.1	588.9	0.0	2 0	0.012992	0.001088	630820	0.5993	5.8	0.032	8.1	7.6	13.1	
08/24/14	8	15	TR	197950	0.5000	0.5340	* 0.5340	631.7	0.1	588.9	0.0	1 1	0.026284	0.001012	462049	0.4389	4.9	0.034	8.1	7.5	13.0	
08/25/14	8	30	TR	198645	0.6950	0.3586	* 0.3586	631.9	0.2	588.9	0.0	3 1	0.039276	0.001101	638054	0.6062	4.6	0.046	7.9	7.5	13.0	12.1
08/26/14	8	20	MB	199035	0.3900	0.6493	* 0.6493	631.9	0.0	589.0	0.1	1 2	0.046072	0.000967	410446	0.3899	7.6	0.036	8.0	8.0	13.5	
08/27/14	8	30	DB	199648	0.6130	0.4163	* 0.4163	631.9	0.0	589.1	0.1	1 0	0.006496	0.001050	656492	0.6237	4.3	0.029	7.8	7.5	14.1	
08/28/14	8	00	JD	200166	0.5180	0.5216	* 0.5216	631.9	0.0	589.2	0.1	1 0	0.006496	0.001004	528128	0.5017	5.7	0.032	7.9	7.6	14.2	
08/29/14	8	05	JD	200832	0.6660	0.3679	* 0.3679	631.9	0.0	589.4	0.2	2 1	0.032780	0.001095	720445	0.6844	7.1	0.032	7.8	7.5	14.1	
08/30/14	9	15	JD	201385	0.5530	0.5285	* 0.5285	631.9	0.0	589.5	0.1	2 0	0.012992	0.001047	597882	0.5680	4.0	0.027	7.8	7.6	14.0	
08/31/14	7	00	JD	201803	0.4180	0.0000	0.0000	631.9	0.0	589.6	0.1	1 1	0.026284	0.000971	423992	0.4028	2.5	0.032	7.8	7.4	14.1	
	TOTALS				17.8520		10.9306		2.1		1.4		0.687780	0.032481		16.7500						
	AVG.				0.5759		0.3526		0.1		0.0		0.022186			0.5403	3.9	0.051	8.2	8.0	18	10.7

OPERATOR'S SIGNATURE:

* All or some transverse inflow.

AVG. NTU	0.05	AVG.PROD.	0.540322
HIGH NTU	0.24	HIGH PROD.	0.722475
LOW NTU	0.03	LOW PROD.	0.347386

Comb. Ph GPM	0.3091
Comb.Turb. GPD	776.0

NORTH YUBA WATER DISTRICT
FORBESTOWN WATER TREATMENT PLANT
OPERATORS RECORD
SYSTEM NO. 58-006
Aug 2014

CHLORINATION-12.5% SODIUM HYPOCHLORITE

						11% SODA ASH			ALUM POLYMER BLEND NTU 926			
			LB.	APPL.	TRT. RES.							
DATE	INCH	16'ths	USE	MG/L	PPM	INCH	16'S	LBS.	INCH	16'S		LBS.
	25	11				0	0	0.0	55	13		
08/01/14	22	11	5.2	1.27	0.69	0	0 /16	0.00	56	6	/16	12.12
08/02/14	20	0	4.4	0.95	0.70	0	0 /16	0.00	38	8	/16	9.82
08/03/14	17	1	4.8	0.97	0.72	0	0 /16	0.00	38	14	/16	8.08
08/04/14	14	0	5.0	0.96	0.72	0	0 /16	0.00	39	5	/16	9.42
08/05/14	11	5	4.8	0.97	0.71	0	0 /16	0.00	39	11	/16	8.08
08/06/14	8	10	4.4	1.12	0.69	0	0 /16	0.00	40	4	/16	12.12
08/07/14	5	6	5.3	1.22	0.69	0	0 /16	0.00	40	13	/16	12.12
08/08/14	2	1	3.1	0.69	0.69	0	0 /16	0.00	41	6	/16	12.12
08/09/14	30	2	4.5	1.04	0.70	0	0 /16	0.00	42	4	/16	18.85
08/10/14	26	2	6.5	1.09	0.70	0	0 /16	0.00	43	3	/16	20.19
08/11/14	23	10	4.1	1.13	0.76	0	0 /16	0.00	43	15	/16	16.16
08/12/14	20	11	4.8	1.22	0.71	0	0 /16	0.00	44	13	/16	18.85
08/13/14	17	3	5.7	1.18	0.71	0	0 /16	0.00	45	14	/16	22.89
08/14/14	13	7	6.1	1.15	0.72	0	0 /16	0.00	46	9	/16	14.81
08/15/14	7	12	9.3	1.60	0.71	0	0 /16	0.00	47	10	/16	22.89
08/16/14	30	9	3.7	1.28	0.69	0	0 /16	0.00	48	3	/16	12.12
08/17/14	26	4	5.6	1.26	0.70	0	0 /16	0.00	49	5	/16	24.23
08/18/14	23	10	4.3	0.87	0.69	0	0 /16	0.00	50	2	/16	17.50
08/19/14	19	14	6.1	1.25	0.70	0	0 /16	0.00	51	3	/16	22.89
08/20/14	17	4	4.3	1.34	0.70	0	0 /16	0.00	51	13	/16	13.46
08/21/14	13	7	6.2	1.34	0.69	0	0 /16	0.00	52	12	/16	20.19
08/22/14	34	4	5.6	1.24	0.70	0	0 /16	0.00	53	9	/16	17.50
08/23/14	31	1	5.2	1.04	0.70	0	0 /16	0.00	54	0	/16	9.42
08/24/14	28	14	3.6	0.98	0.70	0	0 /16	0.00	54	5	/16	6.73
08/25/14	26	0	4.7	0.93	0.71	0	0 /16	0.00	54	11	/16	8.08
08/26/14	24	2	3.1	0.94	0.71	0	0 /16	0.00	54	14	/16	4.04
08/27/14	21	6	4.5	0.87	0.70	0	0 /16	0.00	55	4	/16	2.69
08/28/14	19	1	3.8	0.90	0.72	0	0 /16	0.00	55	8	/16	5.39
08/29/14	16	4	4.6	0.81	0.71	0	0 /16	0.00	56	0	/16	10.77
08/30/14	13	2	5.1	1.08	0.70	0	0 /16	0.00	38	6	/16	8.08
08/31/14	9	0	6.8	2.01	0.70	0	0 /16	0.00	39	1	/16	4.04
			155.4					0.00				405.63
			5.0	1.12	0.70			0.00				13.08
						WT. Of PAC plus WT. Of water						

NORTH YUBA WATER DISTRICT
FORBESTOWN WATER TREATMENT PLANT
OPERATORS RECORD
SYSTEM NO. 58-006
Sep 2014

				RAW WATER				AIR SCOUR BLOWERS				FILTERED WATER						TURBIDITY		PH			
	TIME		OPER	TO PLANT	USAGE	TO POND	FLOW	NO.1	NO.1	NO.2	NO.2		B	BACK WASH	TEST METERS	METER	PRODUC.	RAW	TRT	RAW	TRT	WATER TEMP	ALK.
DATE	HR	MIN	INIT	METER	MG	METER	MG	METER	USE	METER	USE	F	W	MG	flow-MG		MG					CENT.	
				201803	0.3541	0.0000	0.0000	631.9		589.6						423992							
09/01/14	7	15	JD	202563	0.7600	0.0631	0.0631	631.9	0.0	589.8	0.2	3	1	0.039276	0.001197	836630	0.8115	3.2	0.032	7.7	7.6	14.1	12.6
09/02/14	8	00	DB	203055	0.4920	0.0777	0.0777	632.0	0.1	589.8	0.0	1	0	0.006496	0.001006	465237	0.4513	4.3	0.029	7.7	7.6	14.1	
09/03/14	8	00	DB	203624	0.5690	0.0000	0.0000	632.2	0.2	589.8	0.0	2	1	0.032780	0.001039	509654	0.4944	4.3	0.029	7.7	7.6	14.2	
09/04/14	8	00	JD	204280	0.6560	0.3555	0.3555	632.2	0.0	589.9	0.1	2	1	0.032780	0.001080	689730	0.6690	7.6	0.037	7.7	7.6	14.1	
09/05/14	7	50	JD	204777	0.4970	0.4932	0.4932	632.2	0.0	590.0	0.1	1	0	0.006496	0.001002	527150	0.5113	2.9	0.032	7.8	7.6	13.7	
09/06/14	9	00	JD	205368	0.5910	0.4628	0.4628	632.2	0.0	590.1	0.1	2	1	0.032780	0.001060	632989	0.6013	3.6	0.031	7.7	7.6	13.9	
09/07/14	8	00	DB	205933	0.5650	0.3661	0.3661	632.2	0.0	590.2	0.1	2	0	0.012992	0.001034	593120	0.5635	4.0	0.030	7.8	7.5	13.8	
09/08/14	8	00	DB	206517	0.5840	0.4258	0.4258	632.2	0.0	590.3	0.1	1	1	0.026284	0.001054	626546	0.5952	3.7	0.030	7.8	7.5	14.6	13.1
09/09/14	8	00	DB	207116	0.5990	0.4936	0.4936	632.3	0.1	590.3	0.0	1	1	0.026284	0.001058	543533	0.5164	3.9	0.027	7.8	7.5	12.9	
09/10/14	7	45	JD	207685	0.5690	0.4221	0.4221	632.5	0.2	590.3	0.0	2	1	0.032780	0.001050	527294	0.5009	4.0	0.032	7.7	7.5	13.9	
09/11/14	8	00	DB	208117	0.4320	0.5780	0.5780	632.5	0.0	590.3	0.0	1	0	0.006496	0.000976	405784	0.3855	4.5	0.027	7.8	7.5	14.2	
09/12/14	8	15	JD	208746	0.6290	0.8270	0.8270	632.7	0.1	590.3	0.0	2	1	0.032780	0.001069	572195	0.5436	1.6	0.079	7.3	7.3	20.5	
09/13/14	9	15	JD	209412	0.6660	0.3760	0.3760	632.8	0.0	590.3	0.0	2	1	0.032780	0.001110	628369	0.5970	3.3	0.082	7.7	7.5	14.0	
09/14/14	9	30	JD	209972	0.5600	0.4543	0.4543	632.9	0.1	590.3	0.0	1	0	0.006496	0.001034	516455	0.4906	3.5	0.031	7.8	7.6	14.7	
09/15/14	8	20	JD	210581	0.6090	0.3434	0.3434	633.0	0.1	590.4	0.1	2	1	0.032780	0.001063	564705	0.5365	3.0	0.039	7.8	7.5	14.7	14.7
09/16/14	8	15	TR	211177	0.5960	0.4471	0.4471	633.0	0.0	590.5	0.1	2	1	0.032780	0.001050	612153	0.5815	4.1	0.028	7.9	7.5	14.0	
09/17/14	8	00	TR	211664	0.4870	0.5427	0.5427	633.0	0.0	590.6	0.1	2	1	0.032780	0.001012	512509	0.4869	4.0	0.051	7.9	7.5	13.9	
09/18/14	8	05	JD	212191	0.5270	0.4652	0.4652	633.0	0.0	590.7	0.1	2	0	0.012992	0.001028	569186	0.5407	4.7	0.028	7.7	7.6	14.7	
09/19/14	8	00	TR	212528	0.3370	0.7701	0.7701	633.0	0.0	590.8	0.1	1	1	0.026284	0.000935	345690	0.3284	5.6	0.036	7.8	7.5	13.9	
09/20/14	8	15	TR	213161	0.6330	0.3795	0.3795	633.0	0.0	590.9	0.1	2	0	0.012992	0.001071	673358	0.6397	5.9	0.030	7.8	7.5	13.9	
09/21/14	8	15	TR	213561	0.4000	0.5994	0.5994	633.0	0.0	591.0	0.1	1	1	0.026284	0.000967	416349	0.3955	5.9	0.036	7.7	7.5	14.3	
09/22/14	8	00	TR	214095	0.5340	0.4634	0.4634	633.0	0.0	591.1	0.1	2	0	0.012992	0.001026	566350	0.5380	6.8	0.032	7.8	7.5	14.3	12.9
09/23/14	8	25	JD	214487	0.3920	0.9943	0.9943	633.1	0.1	591.1	0.0	1	1	0.026284	0.000954	350255	0.3327	2.0	0.035	7.8	7.5	19.6	
09/24/14	8	20	JD	215049	0.5620	0.9886	0.9886	633.2	0.1	591.1	0.0	1	1	0.026284	0.001039	522240	0.4961	2.5	0.043	7.7	7.5	19.7	
09/25/14	8	15	JD	215491	0.4420	1.3111	1.3111	633.3	0.1	591.1	0.0	1	0	0.006496	0.001017	411498	0.3909	2.2	0.069	7.8	7.5	19.2	
09/26/14	7	50	MB	215731	0.2400	0.0000	0.0000	633.3	0.0	591.1	0.0	0	1	0.019788	0.000878	188669	0.1792	1.6	0.039	7.7	7.5	18.7	
09/27/14	7	30	KM	216136	0.4050	0.0000	0.0000	633.4	0.1	591.1	0.0	2	1	0.032780	0.000986	396350	0.3765	1.5	0.032	7.8	7.4	18.7	
09/28/14	7	30	KM	216421	0.2850	0.0000	0.0000	633.5	0.1	591.1	0.0	1	1	0.026284	0.000939	261890	0.2488	1.3	0.042	7.8	7.4	18.6	
09/29/14	8	15	JD	216844	0.4230	0.0000	0.0000	633.5	0.0	591.1	0.0	1	0	0.006496	0.000980	387425	0.3681	1.8	0.031	7.7	7.4	17.9	13.9
09/30/14	8	00	TR	217212	0.3680	0.0000	0.0000	633.5	0.0	591.2	0.1	1	1	0.026284	0.000956	383970	0.3648	1.5	0.034	7.7	7.4	18.0	
	TOTALS				15.4090		12.7000		1.4		1.6			0.688080	0.030672		14.5360						
	AVG.				0.5136		0.4233		0.0		0.1			0.022936			0.4845	3.6	0.038	7.7	7.5	16	13.4

OPERATOR'S SIGNATURE:

AVG. NTU	0.04	AVG.PROD.		0.484533
HIGH NTU	0.08	HIGH PROD.		0.811531
LOW NTU	0.03	LOW PROD.		0.179236
Comb. Ph GPM			0.3091	
Comb.Turb. GPD			776.0	

* All or some transverse inflow.

NORTH YUBA WATER DISTRICT
FORBESTOWN WATER TREATMENT PLANT
OPERATORS RECORD
SYSTEM NO. 58-006
Sep 2014

CHLORINATION-12.5% SODIUM HYPOCHLORITE

						11% SODA ASH			ALUM POLYMER BLEND NTU 926			
			LB.	APPL.	TRT. RES.							
DATE	INCH	16'ths	USE	MG/L	PPM	INCH	16'S	LBS.	INCH	16'S		LBS.
	9	0				0	0	0.0	39	1		
09/01/14	2	9	6.8	1.27	0.70	0	0 /16	0.00	39	10	/16	12.12
09/02/14	31	15	3.4	0.90	0.70	0	0 /16	0.00	40	0	/16	8.08
09/03/14	27	8	7.3	1.76	0.70	0	0 /16	0.00	40	6	/16	8.08
09/04/14	22	10	8.0	1.43	0.71	0	0 /16	0.00	40	14	/16	10.77
09/05/14	18	13	4.0	0.94	0.70	0	0 /16	0.00	41	3	/16	6.73
09/06/14	15	9	5.3	1.06	0.69	0	0 /16	0.00	41	8	/16	6.73
09/07/14	12	8	5.0	1.07	0.70	0	0 /16	0.00	42	0	/16	10.77
09/08/14	9	5	5.2	1.05	0.71	0	0 /16	0.00	42	5	/16	6.73
09/09/14	5	12	5.8	1.35	0.70	0	0 /16	0.00	42	13	/16	10.77
09/10/14	2	7	5.4	1.30	0.69	0	0 /16	0.00	43	2	/16	6.73
09/11/14	29	8	4.0	1.24	0.71	0	0 /16	0.00	43	8	/16	8.08
09/12/14	24	9	8.1	1.78	0.70	0	0 /16	0.00	44	1	/16	12.12
09/13/14	19	15	7.6	1.52	0.72	0	0 /16	0.00	44	9	/16	10.77
09/14/14	16	6	5.8	1.43	0.69	0	0 /16	0.00	44	15	/16	8.08
09/15/14	12	12	5.9	1.33	0.70	0	0 /16	0.00	45	6	/16	9.42
09/16/14	9	11	5.0	1.03	0.71	0	0 /16	0.00	45	12	/16	8.08
09/17/14	13	4	5.6	1.38	0.71	0	0 /16	0.00	46	1	/16	6.73
09/18/14	10	5	4.8	1.07	0.70	0	0 /16	0.00	46	5	/16	5.39
09/19/14	34	1	3.9	1.42	0.71	0	0 /16	0.00	46	11	/16	4.04
09/20/14	31	5	4.5	0.84	0.70	0	0 /16	0.00	47	0	/16	6.73
09/21/14	29	9	2.9	0.87	0.71	0	0 /16	0.00	47	5	/16	6.73
09/22/14	27	5	3.7	0.82	0.72	0	0 /16	0.00	47	11	/16	8.08
09/23/14	24	13	4.1	1.48	0.85	0	0 /16	0.00	48	2	/16	9.42
09/24/14	21	5	5.7	1.39	0.86	0	0 /16	0.00	48	9	/16	9.42
09/25/14	18	8	4.6	1.41	0.85	0	0 /16	0.00	48	14	/16	6.73
09/26/14	17	3	2.1	1.44	0.80	0	0 /16	0.00	49	4	/16	8.08
09/27/14	14	8	4.4	1.40	0.80	0	0 /16	0.00	49	9	/16	6.73
09/28/14	12	7	3.4	1.63	0.80	0	0 /16	0.00	49	13	/16	5.39
09/29/14	9	15	4.1	1.33	0.81	0	0 /16	0.00	50	2	/16	6.73
09/30/14	7	14	3.4	1.11	0.70	0	0 /16	0.00	50	7	/16	6.73
			149.9					0.00				240.99
			5.0	1.27	0.73			0.00				8.03

WT. Of PAC plus WT. Of water

NORTH YUBA WATER DISTRICT
FORBESTOWN WATER TREATMENT PLANT
OPERATORS RECORD
SYSTEM NO. 58-006
Oct 2014

				RAW WATER				AIR SCOUR BLOWERS				FILTERED WATER					TURBIDITY		PH			
	TIME		OPER											BACK	TEST						WATER	
DATE	HR	MIN	INIT	TO PLANT METER	USAGE MG	TO POND METER		FLOW MG	NO.1 METER	NO.1 USE	NO.2 METER	NO.2 USE	F	B W	WASH MG	METERS flow-MG	METER	PRODUC. MG	RAW	TRT	RAW	TRT	TEMP CENT.	ALK.
				217212	0.3541	0.0000		0.0000	633.5		591.2						383970							
10/01/14	8	25	JD	217512	0.3000	0.0000		0.0000	633.5	0.0	591.3	0.1	1	0	0.006496	0.000915	314520	0.3051	1.1	0.032	7.7	7.5	18.3	
10/02/14	8	15	JD	218047	0.5350	0.0000		0.0000	633.5	0.0	591.4	0.1	2	1	0.032780	0.001034	552250	0.5357	1.3	0.033	7.7	7.5	18.2	
10/03/14	8	00	MB	218399	0.3520	0.0000		0.0000	633.5	0.0	591.5	0.1	1	0	0.006496	0.000937	366842	0.3558	1.2	0.041	7.8	7.5	18.6	
10/04/14	7	10	MB	218925	0.5260	0.0000		0.0000	633.5	0.0	591.6	0.1	2	0	0.012992	0.001019	549044	0.5326	1.2	0.034	7.8	7.5	19.2	
10/05/14	7	25	MB	219344	0.4190	0.0000		0.0000	633.5	0.0	591.7	0.1	2	1	0.032780	0.000971	420282	0.4077	1.4	0.039	7.6	7.5	19.1	
10/06/14	8	25	MB	219781	0.4370	0.0000		0.0000	633.5	0.0	591.9	0.2	4	0	0.025984	0.000969	429796	0.4083	1.1	0.046	7.7	7.5	19.6	18.8
10/07/14	8	30	DB	220264	0.4830	0.0000		0.0000	633.7	0.2	591.9	0.0	4	1	0.045772	0.001002	430120	0.4086	1.3	0.043	7.7	7.6	20.0	
10/08/14	7	30	JD	220823	0.5590	0.0000		0.0000	633.9	0.2	591.9	0.0	4	1	0.045772	0.001069	484536	0.4603	1.2	0.040	7.7	7.7	19.5	
10/09/14	8	30	DB	221272	0.4490	0.5426	*	0.5426	634.1	0.2	591.9	0.0	4	0	0.025984	0.000984	377496	0.3586	2.6	0.060	7.7	7.7	19.0	
10/10/14	8	10	JD	221832	0.5600	1.9604	*	1.9604	634.3	0.2	591.9	0.0	2	1	0.032780	0.001047	497318	0.4725	2.6	0.037	7.8	7.5	17.7	
10/11/14	8	00	DB	222388	0.5560	2.0854	*	2.0854	634.4	0.2	591.9	0.0	2	0	0.012992	0.001036	479115	0.4552	2.4	0.034	7.8	7.4	17.5	
10/12/14	8	00	DB	222756	0.3680	2.3618	*	2.3618	634.5	0.1	591.9	0.0	1	1	0.026284	0.000948	321911	0.3058	2.2	0.041	7.8	7.4	15.0	
10/13/14	8	00	DB	223305	0.5490	2.5753	*	2.5753	634.5	0.0	591.9	0.0	1	0	0.006496	0.001019	482185	0.4581	2.3	0.037	7.7	7.4	17.1	17.9
10/14/14	8	10	JD	223597	0.2920	1.2438	*	1.2438	634.5	0.0	592.0	0.1	1	1	0.026284	0.000906	278212	0.2643	2.2	0.043	7.7	7.4	16.7	
10/15/14	7	50	JD	223971	0.3740	0.0000		0.0000	634.5	0.0	592.1	0.1	1	0	0.006496	0.000948	387197	0.3678	2.3	0.041	7.8	7.4	16.4	
10/16/14	8	30	JD	224369	0.3980	0.0000		0.0000	634.5	0.0	592.2	0.1	1	1	0.026284	0.000961	390655	0.3711	2.0	0.049	7.7	7.3	16.1	
10/17/14	8	30	JD	224778	0.4090	0.0000		0.0000	634.5	0.0	592.2	0.0	1	0	0.006496	0.000963	412440	0.3918	2.1	0.038	7.8	7.4	16.3	
10/18/14	9	00	JD	225173	0.3950	0.0000		0.0000	634.5	0.0	592.3	0.1	1	0	0.006496	0.000961	403275	0.3831	2.2	0.036	7.8	7.4	15.9	
10/19/14	9	10	JD	225553	0.3800	0.0000		0.0000	634.5	0.0	592.4	0.1	1	1	0.026284	0.000965	383980	0.3648	2.4	0.041	7.9	7.4	16.2	
10/20/14	7	55	JD	225742	0.1890	0.0000		0.0000	634.5	0.0	592.4	0.0	1	0	0.006496	0.000859	193450	0.1838	1.6	0.045	7.8	7.4	16.3	16.9
10/21/14	7	55	MB	226170	0.4280	0.0000		0.0000	634.7	0.2	592.4	0.0	2	1	0.032780	0.000976	338935	0.3220	1.6	0.037	7.8	7.4	15.9	
10/22/14	8	00	MB	226430	0.2600	0.0000		0.0000	634.7	0.0	592.4	0.0	1	0	0.006496	0.000917	251440	0.2389	1.7	0.038	7.9	7.4	15.8	
10/23/14	8	30	MB	226881	0.4510	0.0000		0.0000	634.8	0.1	592.4	0.0	1	1	0.026284	0.000987	392336	0.3727	1.3	0.037	7.9	7.4	15.7	
10/24/14	8	30	MB	227132	0.2510	0.0000		0.0000	634.9	0.1	592.4	0.0	1	0	0.006496	0.000906	227992	0.2166	1.6	0.043	8.4	7.4	15.5	
10/25/14	8	15	KM	227448	0.3160	0.0000		0.0000	634.9	0.0	592.4	0.0	1	0	0.006496	0.000913	276290	0.2625	1.4	0.038	8.2	7.5	15.5	
10/26/14	8	15	KM	227744	0.2960	0.0000		0.0000	635.0	0.1	592.4	0.0	1	0	0.006496	0.000913	263409	0.2502	2.3	0.038	8.3	7.4	14.9	
10/27/14	8	10	MB	228141	0.3970	0.0000		0.0000	635.1	0.1	592.4	0.0	1	1	0.026284	0.001012	326441	0.3101	1.8	0.051	8.0	7.4	14.3	20.3
10/28/14	8	15	TR	228504	0.3630	0.0653	*	0.0653	635.1	0.0	592.5	0.1	1	0	0.006496	0.000947	370844	0.3523	3.4	0.049	8.4	7.5	13.7	
10/29/14	8	15	TR	228731	0.2270	2.4684	*	2.4684	635.1	0.0	592.5	0.0	1	1	0.026284	0.000884	224185	0.2130	3.7	0.051	8.2	7.4	13.7	
10/30/14	8	00	TR	229119	0.3880	2.4902	*	2.4902	635.1	0.0	592.6	0.1	1	1	0.026284	0.000961	377247	0.3584	5.1	0.074	8.1	7.4	14.1	
10/31/14	8	00	TR	229534	0.4150	0.5172	*	0.5172	635.1	0.0	592.7	0.1	1	0	0.006496	0.000969	431840	0.4102	3.9	0.057	7.9	7.4	14.1	
	TOTALS				12.3220			16.3104		1.7		1.5			0.595336	0.029900		11.0979						
	AVG.				0.3975			0.5261		0.1		0.0			0.019204			0.3580	2.1	0.043	7.9	7.4	17	18.5

OPERATOR'S SIGNATURE:

* All or some transverse inflow.

AVG. NTU	0.04	AVG.PROD.	0.357996
HIGH NTU	0.07	HIGH PROD.	0.535683
LOW NTU	0.03	LOW PROD.	0.183778

Comb. Ph GPM	0.3091
Comb.Turb. GPD	776.0

NORTH YUBA WATER DISTRICT
FORBESTOWN WATER TREATMENT PLANT
OPERATORS RECORD
SYSTEM NO. 58-006
Oct 2014

CHLORINATION-12.5% SODIUM HYPOCHLORITE

						11% SODA ASH			ALUM POLYMER BLEND NTU 926			
DATE	INCH	16'ths	LB. USE	APPL. MG/L	TRT. RES. PPM	INCH	16'S	LBS.	INCH	16'S		LBS.
	7	14				0	0	0.0	50	7		
10/01/14	6	2	2.9	1.13	0.72	0	0	/16 0.00	50	13	/16	8.08
10/02/14	3	1	5.0	1.12	0.72	0	0	/16 0.00	51	2	/16	6.73
10/03/14	31	4	3.3	1.11	0.73	0	0	/16 0.00	51	5	/16	4.04
10/04/14	28	7	4.6	1.04	0.70	0	0	/16 0.00	51	10	/16	6.73
10/05/14	26	3	3.7	1.09	0.70	0	0	/16 0.00	52	2	/16	10.77
10/06/14	23	14	3.8	1.11	0.64	0	0	/16 0.00	52	8	/16	8.08
10/07/14	21	4	4.3	1.26	0.72	0	0	/16 0.00	52	14	/16	8.08
10/08/14	18	5	3.1	0.81	0.70	0	0	/16 0.00	53	4	/16	8.08
10/09/14	15	15	3.9	1.30	0.72	0	0	/16 0.00	53	12	/16	10.77
10/10/14	12	15	4.9	1.25	0.70	0	0	/16 0.00	54	5	/16	12.12
10/11/14	10	0	4.8	1.27	0.70	0	0	/16 0.00	54	12	/16	9.42
10/12/14	16	15	3.1	1.20	0.71	0	0	/16 0.00	55	0	/16	5.39
10/13/14	14	4	4.4	1.15	0.71	0	0	/16 0.00	37	3	/16	12.12
10/14/14	12	15	2.1	0.98	0.72	0	0	/16 0.00	37	7	/16	5.39
10/15/14	11	10	3.0	0.98	0.72	0	0	/16 0.00	37	14	/16	9.42
10/16/14	9	13	3.0	0.96	0.72	0	0	/16 0.00	38	3	/16	6.73
10/17/14	8	2	3.6	1.10	0.70	0	0	/16 0.00	38	7	/16	5.39
10/18/14	6	3	3.2	0.99	0.71	0	0	/16 0.00	38	12	/16	6.73
10/19/14	4	5	3.1	1.01	0.71	0	0	/16 0.00	39	0	/16	4.04
10/20/14	3	4	1.7	1.14	0.72	0	0	/16 0.00	39	3	/16	4.04
10/21/14	32	2	3.1	1.15	0.71	0	0	/16 0.00	39	8	/16	6.73
10/22/14	30	12	2.3	1.13	0.71	0	0	/16 0.00	39	12	/16	5.39
10/23/14	28	4	4.1	1.32	0.71	0	0	/16 0.00	40	1	/16	6.73
10/24/14	26	15	2.1	1.19	0.71	0	0	/16 0.00	40	5	/16	5.39
10/25/14	25	1	3.1	1.40	0.60	0	0	/16 0.00	40	9	/16	5.39
10/26/14	23	8	2.6	1.23	0.70	0	0	/16 0.00	40	13	/16	5.39
10/27/14	21	5	3.6	1.38	0.69	0	0	/16 0.00	41	2	/16	2.69
10/28/14	19	2	3.6	1.22	0.70	0	0	/16 0.00	41	7	/16	6.73
10/29/14	17	13	2.1	1.21	0.70	0	0	/16 0.00	41	9	/16	2.69
10/30/14	15	10	3.6	1.20	0.71	0	0	/16 0.00	41	14	/16	6.73
10/31/14	13	3	4.0	1.17	0.70	0	0	/16 0.00	42	2	/16	4.04
			105.6					0.00				210.03
			3.4	1.15	0.70			0.00				6.78

WT. Of PAC plus WT. Of water

NORTH YUBA WATER DISTRICT
FORBESTOWN WATER TREATMENT PLANT
OPERATORS RECORD
SYSTEM NO. 58-006
Nov 2014

	TIME		OPER	RAW WATER				AIR SCOUR BLOWERS				FILTERED WATER						TURBIDITY		PH			
DATE	HR	MIN	INIT	TO PLANT METER	USAGE MG	TO POND METER	FLOW MG	NO.1 METER	NO.1 USE	NO.2 METER	NO.2 USE	F	B W	BACK WASH MG	TEST METERS flow-MG	METER	PRODUC. MG	RAW	TRT	RAW	TRT	WATER TEMP CENT.	ALK.
				229534	0.3541	0.0000	0.0000	635.1		592.7						431840							
11/01/14	8	15	TR	229760	0.2260	0.0000	0.0000	635.1	0.0	592.7	0.0	1	0	0.006496	0.000880	226940	0.2201	3.7	0.052	7.9	7.4	13.7	
11/02/14	7	15	TR	230046	0.2860	0.0000	0.0000	635.1	0.0	592.8	0.1	1	1	0.026284	0.000911	274577	0.2663	6.5	0.054	7.8	7.4	12.8	
11/03/14	8	20	JD	230444	0.3980	0.0000	0.0000	635.1	0.0	592.9	0.1	1	0	0.006496	0.000961	399465	0.3875	2.5	0.043	7.8	7.3	12.8	16.4
11/04/14	8	10	MB	230716	0.2720	0.0000	0.0000	635.2	0.1	592.9	0.0	0	1	0.019788	0.000908	234319	0.2273	1.9	0.050	7.8	7.3	12.8	
11/05/14	8	15	MB	231170	0.4540	0.0000	0.0000	635.3	0.1	592.9	0.0	2	0	0.012992	0.000991	405575	0.3934	2.3	0.044	7.9	7.4	12.9	
11/06/14	7	45	JD	231344	0.1740	0.0000	0.0000	635.3	0.0	592.9	0.0	0	0	0.000000	0.000850	156095	0.1483	2.5	0.043	7.9	7.4	12.8	
11/07/14	8	10	MB	231604	0.2600	0.0000	0.0000	635.4	0.1	592.9	0.0	0	1	0.019788	0.000897	216955	0.2061	1.8	0.050	8.0	7.4	13.6	
11/08/14	7	00	MB	231927	0.3230	0.0000	0.0000	635.4	0.0	592.9	0.0	1	0	0.006496	0.000937	317425	0.3016	3.4	0.054	7.9	7.4	13.7	
11/09/14	7	10	MB	232310	0.3830	0.0000	0.0000	635.5	0.1	592.9	0.0	1	0	0.006496	0.000937	326347	0.3100	4.0	0.043	7.8	7.4	14.0	
11/10/14	7	40	MB	232573	0.2630	0.0000	0.0000	635.6	0.1	592.9	0.0	1	1	0.026284	0.000900	232776	0.2211	3.6	0.047	7.7	7.5	13.5	15.8
11/11/14	8	00	DB	232841	0.3870	0.0000	0.0000	635.6	0.0	592.9	0.0	0	2	0.039576	0.000898	260960	0.2479	2.3	0.047	7.6	7.4	14.0	
11/12/14	7	30	JD	233173	0.3320	0.0000	0.0000	635.6	0.0	593.0	0.1	1	0	0.006496	0.000928	332884	0.3162	5.1	0.047	7.8	7.5	14.2	
11/13/14	7	45	JD	233572	0.3990	0.6145	* 0.6145	635.6	0.0	593.1	0.1	2	1	0.032780	0.000967	400408	0.3804	4.0	0.047	7.9	7.5	13.1	
11/14/14	7	00	DB	233859	0.2870	2.4022	* 2.4022	635.6	0.0	593.1	0.0	1	1	0.026284	0.000913	297195	0.2823	4.6	0.071	7.8	7.4	13.2	
11/15/14	8	30	KM	234264	0.4050	1.7778	* 1.7778	635.6	0.0	593.2	0.1	0	1	0.019788	0.000969	414805	0.3941	3.4	0.059	7.8	7.4	12.5	
11/16/14	8	00	DB	234498	0.2340	0.0173	0.0173	635.6	0.0	593.2	0.0	1	0	0.006496	0.000885	243672	0.2315	2.9	0.052	7.6	7.3	13.2	
11/17/14	8	00	DB	234816	0.3180	0.0000	0.0000	635.6	0.0	593.3	0.1	1	1	0.026284	0.000924	307601	0.2922	5.3	0.055	7.8	7.4	11.8	14.9
11/18/14	8	15	JD	235036	0.2200	0.0000	0.0000	635.6	0.0	593.3	0.0	0	1	0.019788	0.000871	175850	0.1671	4.5	0.054	7.8	7.3	11.6	
11/19/14	8	00	JD	235440	0.4040	0.0000	0.0000	635.7	0.1	593.3	0.0	1	0	0.006496	0.000961	365883	0.3476	6.7	0.049	7.9	7.4	11.7	
11/20/14	8	00	JD	235691	0.2510	0.0000	0.0000	635.8	0.1	593.3	0.0	0	1	0.019788	0.000893	227514	0.2161	6.0	0.052	7.9	7.4	11.3	
11/21/14	8	15	JD	236039	0.3480	0.0000	0.0000	635.8	0.0	593.3	0.0	1	0	0.006496	0.000947	319745	0.3038	5.7	0.052	7.8	7.3	11.1	
11/22/14	9	20	JD	236332	0.2930	0.0000	0.0000	635.8	0.0	593.3	0.0	0	0	0.000000	0.000906	269065	0.2556	5.5	0.040	7.8	7.4	11.1	
11/23/14	8	40	JD	236485	0.1530	0.0000	0.0000	635.8	0.0	593.3	0.0	1	0	0.006496	0.000848	138655	0.1317	5.6	0.040	7.8	7.3	10.6	
11/24/14	8	30	JD	236893	0.4080	0.0000	0.0000	635.9	0.1	593.3	0.0	1	1	0.026284	0.000976	368535	0.3501	2.1	0.050	7.8	7.3	10.3	15.5
11/25/14	8	15	KM	237085	0.1920	0.7107	* 0.7107	636.0	0.1	593.4	0.1	1	1	0.026284	0.000869	177670	0.1688	2.1	0.049	7.8	7.4	12.7	
11/26/14	8	00	KM	237464	0.3790	2.3933	* 2.3933	636.0	0.0	593.4	0.0	0	0	0.000000	0.000954	392416	0.3728	2.9	0.043	7.9	7.4	10.6	
11/27/14	7	00	KM	237831	0.3670	1.8673	* 1.8673	636.0	0.0	593.5	0.1	1	1	0.026284	0.000958	385760	0.3665	5.6	0.076	7.7	7.4	14.1	
11/28/14	7	45	KM	238000	0.1690	0.0000	0.0000	636.0	0.0	593.5	0.0	1	1	0.026284	0.000859	172140	0.1635	4.2	0.070	7.9	7.3	13.1	
11/29/14	7	45	KM	238408	0.4080	0.0000	0.0000	636.0	0.0	593.6	0.1	1	1	0.026284	0.000969	417266	0.3964	3.8	0.054	7.9	7.4	11.1	
11/30/14	8	00	KM	238727	0.3190	0.0000	0.0000	636.0	0.0	593.6	0.0	0	0	0.000000	0.000941	341273	0.3242	2.5	0.094	7.8	7.4	12.4	
	TOTALS				9.3120		9.7831		0.9		0.9			0.479308	0.027610		8.3906						
	AVG.				0.3104		0.3261		0.0		0.0			0.015977			0.2797	3.9	0.053	7.8	7.4	13	15.7

OPERATOR'S SIGNATURE:

* All or some transverse inflow.

AVG. NTU	0.05	AVG.PROD.	0.279687
HIGH NTU	0.09	HIGH PROD.	0.396403
LOW NTU	0.04	LOW PROD.	0.131722

Comb. Ph GPM	0.3091
Comb.Turb. GPD	776.0

NORTH YUBA WATER DISTRICT
FORBESTOWN WATER TREATMENT PLANT
OPERATORS RECORD
SYSTEM NO. 58-006
Nov 2014

CHLORINATION-12.5% SODIUM HYPOCHLORITE

						11% SODA ASH			ALUM POLYMER BLEND NTU 926		
			LB.	APPL.	TRT. RES.						
DATE	INCH	16'ths	USE	MG/L	PPM	INCH	16'S	LBS.	INCH	16'S	LBS.
	13	3				0	0	0.0	42	2	
11/01/14	12	0	2.6	1.27	0.70	0	0 /16	0.00	42	3 /16	1.35
11/02/14	10	9	2.4	1.08	0.71	0	0 /16	0.00	42	5 /16	2.69
11/03/14	8	8	3.4	1.05	0.71	0	0 /16	0.00	42	8 /16	4.04
11/04/14	7	2	2.3	1.19	0.71	0	0 /16	0.00	42	11 /16	4.04
11/05/14	5	4	3.9	1.19	0.70	0	0 /16	0.00	42	14 /16	4.04
11/06/14	34	10	1.2	0.97	0.71	0	0 /16	0.00	43	0 /16	2.69
11/07/14	33	3	2.4	1.37	0.70	0	0 /16	0.00	43	2 /16	2.69
11/08/14	31	2	3.1	1.23	0.75	0	0 /16	0.00	43	4 /16	2.69
11/09/14	28	14	3.7	1.42	0.70	0	0 /16	0.00	43	7 /16	4.04
11/10/14	27	5	2.6	1.39	0.70	0	0 /16	0.00	43	9 /16	2.69
11/11/14	25	10	2.8	1.34	0.71	0	0 /16	0.00	43	12 /16	4.04
11/12/14	23	11	3.2	1.20	0.72	0	0 /16	0.00	43	15 /16	4.04
11/13/14	21	8	3.6	1.13	0.72	0	0 /16	0.00	44	2 /16	4.04
11/14/14	19	10	3.1	1.30	0.70	0	0 /16	0.00	44	4 /16	2.69
11/15/14	17	5	3.0	0.91	0.70	0	0 /16	0.00	44	7 /16	4.04
11/16/14	15	15	2.3	1.17	0.71	0	0 /16	0.00	44	9 /16	2.69
11/17/14	14	0	3.2	1.31	0.71	0	0 /16	0.00	44	14 /16	6.73
11/18/14	12	14	1.8	1.32	0.72	0	0 /16	0.00	45	0 /16	2.69
11/19/14	10	10	3.7	1.27	0.70	0	0 /16	0.00	45	4 /16	4.04
11/20/14	9	4	2.3	1.25	0.71	0	0 /16	0.00	45	6 /16	2.69
11/21/14	7	4	3.3	1.29	0.72	0	0 /16	0.00	45	9 /16	4.04
11/22/14	5	7	3.0	1.39	0.71	0	0 /16	0.00	45	13 /16	5.39
11/23/14	4	9	1.4	1.30	0.71	0	0 /16	0.00	45	15 /16	2.69
11/24/14	2	1	4.1	1.40	0.71	0	0 /16	0.00	46	3 /16	5.39
11/25/14	34	12	1.9	1.33	0.70	0	0 /16	0.00	46	5 /16	2.69
11/26/14	32	9	3.6	1.15	0.70	0	0 /16	0.00	46	9 /16	5.39
11/27/14	30	8	3.4	1.10	0.71	0	0 /16	0.00	46	13 /16	2.69
11/28/14	29	9	1.5	1.13	0.70	0	0	0.00	46	15 /16	2.69
11/29/14	27	3	3.9	1.18	0.71	0	0 /16	0.00	47	4 /16	6.73
11/30/14	25	6	3.0	1.10	0.70	0	0 /16	0.00	47	8 /16	5.39
			85.3					0.00			111.74
			2.8	1.22	0.71			0.00			3.72
						WT. Of PAC plus WT. Of water					

NORTH YUBA WATER DISTRICT
FORBESTOWN WATER TREATMENT PLANT
OPERATORS RECORD
SYSTEM NO. 58-006
Dec 2014

				RAW WATER				AIR SCOUR BLOWERS						FILTERED WATER				TURBIDITY		PH			
DATE	TIME HR	MIN	OPER INIT	TO PLANT METER	USAGE MG	TO POND METER	FLOW MG	NO.1 METER	NO.1 USE	NO.2 METER	NO.2 USE	F	B W	BACK WASH MG	TEST METERS flow-MG	METER	PRODUC. MG	RAW	TRT	RAW	TRT	WATER TEMP CENT.	ALK.
				238727	0.3541	0.0000	0.0000	636.0		593.6						341273							
12/01/14	8	10	KM	239111	0.3840	0.0000	0.0000	636.0	0.0	593.8	0.2	2	1	0.032780	0.000969	382281	0.3708	2.2	0.071	7.8	7.4	11.8	16.2
12/02/14	9	30	TR	239253	0.1420	0.0000	0.0000	636.0	0.0	593.8	0.0	0	1	0.019788	0.000843	119490	0.1159	4.9	0.056	7.8	7.3	10.4	
12/03/14	8	30	JD	239662	0.4090	0.0000	0.0000	636.0	0.0	593.8	0.0	1	0	0.006496	0.000963	366949	0.3559	4.1	0.045	7.9	7.4	10.7	
12/04/14	8	00	TR	239817	0.1550	0.0000	0.0000	636.1	0.1	593.8	0.0	1	0	0.006496	0.000854	144070	0.1397	13.3	0.112	7.8	7.5	10.3	
12/05/14	8	10	JD	240286	0.4690	0.0000	0.0000	636.2	0.1	593.8	0.0	1	1	0.026284	0.000995	411802	0.3994	9.6	0.076	7.8	7.4	10.7	
12/06/14	8	15	TR	240499	0.2130	0.0000	0.0000	636.2	0.0	593.8	0.0	1	0	0.006496	0.000878	201920	0.1918	10.5	0.072	7.7	7.3	10.6	
12/07/14	8	15	TR	240806	0.3070	0.0000	0.0000	636.2	0.0	593.8	0.0	1	0	0.006496	0.000923	279120	0.2652	10.7	0.079	7.7	7.3	10.3	
12/08/14	8	00	JD	241137	0.3310	0.0000	0.0000	636.3	0.1	593.8	0.0	1	1	0.026284	0.000932	282672	0.2685	8.1	0.127	7.6	7.4	10.5	15.7
12/09/14	8	00	TR	241489	0.3520	0.0000	0.0000	636.3	0.0	593.9	0.1	1	2	0.046072	0.000952	357664	0.3398	10.1	0.076	7.7	7.3	10.2	
12/10/14	8	30	JD	241880	0.3910	0.0000	0.0000	636.3	0.0	594.0	0.1	1	0	0.006496	0.000960	400175	0.3802	7.7	0.050	7.8	7.2	10.5	
12/11/14	8	00	JD	242271	0.3910	0.0000	0.0000	636.3	0.0	594.1	0.1	0	1	0.019788	0.000963	392585	0.3730	7.5	0.055	7.6	7.2	10.8	
12/12/14	8	25	JD	242483	0.2120	0.0000	0.0000	636.3	0.0	594.1	0.0	1	0	0.006496	0.000882	221720	0.2106	8.1	0.051	7.8	7.2	10.1	
12/13/14	7	55	JD	242762	0.2790	0.4984	* 0.4984	636.3	0.0	594.2	0.1	1	0	0.006496	0.000910	284649	0.2704	8.6	0.064	7.6	7.3	9.8	
12/14/14	8	55	JD	243180	0.4180	0.0709	* 0.0709	636.3	0.0	594.3	0.1	1	1	0.026284	0.000978	428570	0.4071	7.9	0.061	7.6	7.2	9.5	
12/15/14	8	25	JD	243542	0.3620	0.0000	0.0000	636.3	0.0	594.3	0.0	1	0	0.006496	0.000947	367755	0.3494	8.2	0.049	7.7	7.2	9.5	16.1
12/16/14	8	00	DB	243913	0.3710	0.0963	0.0963	636.4	0.1	594.3	0.0	1	1	0.026284	0.000956	332113	0.3155	8.4	0.074	7.8	7.2	9.0	
12/17/14	8	00	DB	244146	0.2330	0.4266	* 0.4266	636.5	0.1	594.3	0.0	1	0	0.006496	0.000882	206800	0.1965	7.9	0.070	8.0	7.3	9.0	
12/18/14	8	00	DB	244490	0.3440	1.6202	* 1.6202	636.6	0.1	594.3	0.0	1	1	0.026284	0.000930	294403	0.2797	8.7	0.085	7.9	7.2	8.1	
12/19/14	8	00	DB	244836	0.3460	0.4803	* 0.4803	636.6	0.0	594.3	0.0	1	0	0.006496	0.000941	322432	0.3063	8.5	0.068	7.8	7.2	8.9	
12/20/14	8	00	DB	245119	0.2830	0.0000	0.0000	636.7	0.1	594.3	0.0	0	1	0.019788	0.000908	249951	0.2375	8.7	0.056	7.8	7.3	9.8	
12/21/14	8	00	DB	245334	0.2150	0.0000	0.0000	636.7	0.0	594.3	0.0	1	0	0.006496	0.000930	284345	0.2701	8.6	0.055	7.7	7.3	9.0	
12/22/14	8	00	DB	245761	0.4270	0.0000	0.0000	636.8	0.1	594.3	0.0	1	0	0.006496	0.000937	291086	0.2765	7.6	0.077	7.6	7.2	8.9	18.0
12/23/14	8	25	JD	246154	0.3930	0.7582	* 0.7582	636.8	0.0	594.4	0.1	1	1	0.026284	0.000974	404765	0.3845	6.5	0.053	7.9	7.3	8.7	
12/24/14	8	30	JD	246561	0.4070	0.6680	* 0.6680	636.8	0.0	594.5	0.1	2	0	0.012992	0.000984	419185	0.3982	6.9	0.059	7.8	7.3	8.8	
12/25/14	9	15	JD	246786	0.2250	0.6588	* 0.6588	636.8	0.0	594.5	0.0	0	0	0.000000	0.000891	237440	0.2256	6.3	0.127	7.9	7.3	8.0	
12/26/14	8	20	JD	247160	0.3740	0.6016	* 0.6016	636.8	0.0	594.6	0.1	2	1	0.032780	0.000973	390997	0.3714	5.5	0.049	7.8	7.3	7.7	
12/27/14	8	55	JD	247576	0.4160	0.2194	* 0.2194	636.8	0.0	594.7	0.1	1	0	0.006496	0.000987	433835	0.4121	5.2	0.108	7.8	7.3	7.2	
12/28/14	8	45	JD	247784	0.2080	0.0831	* 0.0831	636.8	0.0	594.7	0.0	0	1	0.019788	0.000887	223642	0.2125	5.0	0.048	7.9	7.3	7.1	
12/29/14	8	00	DB	247128	-0.6560	0.6684	* 0.6684	636.8	0.0	594.8	0.1	1	0	0.006496	0.000952	360300	0.3423	4.7	0.045	7.9	7.2	6.5	17.1
12/30/14	8	00	DB	248461	1.3330	0.2419	* 0.2419	636.9	0.1	594.8	0.0	1	0	0.006496	0.000950	308548	0.2931	5.4	0.057	7.8	7.2	6.5	
12/31/14	8	00	KM	248820	0.3590	0.0000	0.0000	637.0	0.1	594.8	0.0	1	1	0.026284	0.000952	348446	0.3310	4.4	0.058	7.9	7.3	5.3	
	TOTALS				10.0930		7.0921		1.0		1.2			0.485204	0.028982		9.2907						
	AVG.				0.3256		0.2288		0.0		0.0			0.015652			0.2997	7.4	0.069	7.8	7.3	9	16.6

OPERATOR'S SIGNATURE:

_____

_____

_____

* All or some transverse inflow.

AVG. NTU	0.07	AVG.PROD.		0.299701
HIGH NTU	0.13	HIGH PROD.		0.412143
LOW NTU	0.05	LOW PROD.		0.115905
Comb. Ph GPM			0.3091	
Comb.Turb. GPD			776.0	

NORTH YUBA WATER DISTRICT
FORBESTOWN WATER TREATMENT PLANT
OPERATORS RECORD
SYSTEM NO. 58-006
Dec 2014

CHLORINATION-12.5% SODIUM HYPOCHLORITE

			LB.	APPL.	TRT. RES.	11% SODA ASH			ALUM POLYMER BLEND NTU 926			
DATE	INCH	16'ths	USE	MG/L	PPM	INCH	16'S	LBS.	INCH	16'S		LBS.
	25	6				0	0	0.0	47	5		
12/01/14	23	3	5.2	1.27	0.70	0	0	/16 0.00	47	9	/16	5.39
12/02/14	22	3	1.6	1.69	0.71	0	0	/16 0.00	47	12	/16	4.04
12/03/14	19	1	5.1	1.72	0.70	0	0	/16 0.00	47	15	/16	4.04
12/04/14	18	0	1.7	1.49	0.71	0	0	/16 0.00	48	2	/16	4.04
12/05/14	15	3	5.3	1.59	0.71	0	0	/16 0.00	48	8	/16	8.08
12/06/14	13	14	2.1	1.34	0.70	0	0	/16 0.00	48	11	/16	4.04
12/07/14	12	1	3.0	1.34	0.71	0	0	/16 0.00	49	1	/16	8.08
12/08/14	10	5	3.1	1.38	0.72	0	0	/16 0.00	49	6	/16	6.73
12/09/14	8	5	3.3	1.16	0.70	0	0	/16 0.00	49	11	/16	6.73
12/10/14	6	1	3.7	1.16	0.70	0	0	/16 0.00	50	1	/16	8.08
12/11/14	4	5	2.9	0.92	0.70	0	0	/16 0.00	50	6	/16	6.73
12/12/14	2	8	3.0	1.69	0.70	0	0	/16 0.00	50	9	/16	4.04
12/13/14	19	4	3.1	1.37	0.70	0	0	/16 0.00	50	14	/16	6.73
12/14/14	16	9	4.4	1.30	0.71	0	0	/16 0.00	51	4	/16	8.08
12/15/14	14	2	3.0	1.03	0.71	0	0	/16 0.00	51	9	/16	6.73
12/16/14	25	10	2.8	1.06	0.71	0	0	/16 0.00	51	14	/16	6.73
12/17/14	24	0	3.0	1.83	0.70	0	0	/16 0.00	52	1	/16	4.04
12/18/14	21	11	3.8	1.62	0.70	0	0	/16 0.00	52	7	/16	8.08
12/19/14	19	5	3.9	1.52	0.71	0	0	/16 0.00	52	10	/16	4.04
12/20/14	17	7	3.1	1.55	0.70	0	0	/16 0.00	52	14	/16	5.39
12/21/14	15	5	3.5	1.54	0.71	0	0	/16 0.00	53	3	/16	6.73
12/22/14	13	3	3.5	1.51	0.70	0	0	/16 0.00	53	8	/16	6.73
12/23/14	10	12	4.0	1.24	0.71	0	0	/16 0.00	53	14	/16	8.08
12/24/14	8	2	4.3	1.29	0.70	0	0	/16 0.00	54	4	/16	8.08
12/25/14	6	10	2.5	1.31	0.70	0	0	/16 0.00	54	6	/16	2.69
12/26/14	4	4	3.9	1.26	0.70	0	0	/16 0.00	54	12	/16	8.08
12/27/14	1	8	4.5	1.31	0.70	0	0	/16 0.00	55	2	/16	8.08
12/28/14	33	6	1.9	1.07	0.70	0	0	/16 0.00	55	5	/16	4.04
12/29/14	31	13	2.6	0.90	0.70	0	0	/16 0.00	37	10	/16	6.73
12/30/14	30	4	2.6	1.05	0.70	0	0	/16 0.00	37	14	/16	5.39
12/31/14	28	14	2.3	0.82	0.82	0	0	/16 0.00	37	5	/16	4.04
			102.4					0.00				188.48
			3.3	1.33	0.71			0.00				6.08

WT. Of PAC plus WT. Of water

MATERIAL SAFETY DATA SHEET

NSE

Identity 926

Section I General Information

Company Identity
NTU Technologies, Inc.

Emergency Telephone Number
Chemtrec 1-800- 424-9300

Address
P.O. Box 1469
Solana Beach, CA 92075

Telephone Number
(858) 792-9273

Proper Shipping Name: None
D.O.T. Hazard Name: None
D.O.T. ID Number: None
D.O.T. Hazard Class: None
RCRA Hazard Class: None
E.P.A. Priority Pollutants: None
NSF Name: 926
Maximum Use of Product in Potable Water Is 55 mg/L

HMIS & NFPA Hazard Ratings

Health	2
Flammability	0
Reactivity	0

Description: Proprietary Blend

Section II – Hazardous Ingredients/Identity Information

Component	CAS No.	Exposure Limits
Contains Water Soluble Aluminum compounds	1327-41-9	OSHA PEL/ACGIH TLV FOR Aluminum Soluble Salts: TWA 2 Mg/M3 as Aluminum

Section II-A –Aquatic Toxicity

Species	LC50/HRS		
Pimilphales Promelas	1056 mg/L/24hrs 609 mg/L/96hrs	832 mg/L/48hrs	684 mgL/72hrs
Daphnia Magna	642 mg/L/24hrs	397 mg/L/48hrs	

Section III – Effects of Overexposure

EYE: Can cause injury or irritation.

SKIN: Can cause injury or irritation.

INHALATION: Inhaling dust or mist created during use may injure the respiratory system and cause an adverse lung reaction.

ORAL: Small amounts transferred to the mouth by fingers during use, etc., should not injure. Swallowing large amounts may cause injury.

Comments: This product may enhance allergic conditions on certain people.

Section IV – Emergency and First Aid Procedures

EYES: Immediately flush with water for 15 minutes; get immediate medical attention.

SKIN: First flush with clear water, then wash with soap and water. If there is any injury or irritation, get medical attention.

INHALATION: Get medical attention if there is any discomfort.

ORAL: Get medical attention if large amount swallowed or there is any discomfort.

Section V – Fire and Explosion Data

Flash Point (method Used): None, Product not flammable.

Extinguishing Media: Cool containers with water fog to prevent pressure build-up

Special Fire Fighting Procedures: Self-contained breathing apparatus and protective clothing should be worn in fighting fires involving chemicals.

Unusual fire and explosion hazards: Hazardous chlorine compounds may form when exposes to high heat or fire.

Section VI – Physical Data

Boiling Point (at 760 MM HG): Approx. 212F/100C
Specific Gravity (at 77 DEG F/25 DEG C): 1.25 to 1.33
Melting Point: Not Applicable
Vapor pressure (at77 DEG F/25 DEG C): 24 MM (water)
Vapor density (Air = 1 at 77 DEG F/25 DEG C): that of moist air
Percent solids by weight (%): 50%

Evaporation rate: As water
Solubility in water (%): approximately 100
Odor, Appearance, color: Clear, colorless to slightly yellow liquid with no odor

Note: The above information is not intended for use in preparing product specifications. Contact manufacturer before writing specifications.

Section VII – Reactivity Data

Stability: Stable

Incompatibility (Material to Avoid): Oxidizing Material can cause a reaction.

Conditions to avoid: Exposure to above and continuous high temperatures.

Hazardous decomposition products: Chlorine compounds, metal oxides.

Hazardous polymerization: Will Not Occur

Section VIII – Spill, Leak, Maintenance/Repair and Disposal Procedures

Steps to be taken in case material is released or spilled: Use absorbent material to collect and contain; wash with clear water only.

Personal Protective Equipment:
Eyes: Safety glasses, as a minimum, goggles if splashing could occur.

SKIN: Washing at mealtime and end of shift is adequate.

INHALATION: No respiratory protection should be needed unless dust or mist is created during use.

WASTE DISPOSAL METHOD: Manufacturer suggests that all local, state and federal regulations concerning health and pollution be reviewed to determine approved disposal procedures. Contact manufacturer if there are any questions.

D.O.T. (49CFR171.8)/E.P.A.(40DFR117)SPILL REPORTING INFORMATION:
Hazardous Substance: None Reportable Quantity: Not applicable
Concentration of hazardous substance: Not applicable
Reportable Quantity of product if spilled: Not applicable

Section IX – Routine Handling Precautions

Personal Protective Equipment:

EYES: Safety glasses, as a minimum, goggles if splashing could occur.

SKIN: Washing at mealtime and end of shift is adequate.

INHALATION: No respiratory protection should be needed unless dust or mist is created during use.
VENTILATION: Local exhaust: Use localized ventilation to keep airborne concentrations below exposure limits.
SUITABLE RESPITATOR: Dust/Mist type.

These precautions are for room temperature handling. Use at elevated temperatures or aerosol/spray applications may require added precautions.

*Good practice requires that gross amount of any chemical be removed from the skin as soon as practical, especially before eating or smoking.

COMMENTS: Avoid eye contact and do not wear contact lenses.

Section X – Special Precautions

Use reasonable care and caution in storage and handling. Store between 32F/0C and 120F49C.

Application
Should be fed neat to the point of application or if necessary, diluted with low alkalinity water prior to feed. Chase water should be avoided if possible.

Storage
Store this product out of direct sunlight if possible. The 926 has an indefinite shelf-life as long as it remains undiluted.

Material Safety Data Sheet

PIONEER CHLOR ALKALI COMPANY, INC.
4200 NCNB CENTER
700 LOUISIANA STREET
HOUSTON, TEXAS 77002

CHLORINE

This Material Safety Data Sheet is principally directed to managerial, safety, hygiene and medical personnel. The description of physical, chemical and toxicological properties and handling advice is based on experimental results and past experience. It is intended as a starting point for the development of safety and health procedures.

CAS Number: 7782-50-5

I. PHYSICAL AND CHEMICAL PROPERTIES

Formula: Cl_2
Molecular Weight: 70.91
Physical State: Green-yellow colored gas (68°F/20°C at 14.7 psia) Amber colored liquid
Specific Gravity (liquid): 1.42 at 60.1°F/15.6°C, 85.6 psia (water=1)
Freezing Point: −149.8°F/−101°C
Boiling Point: −29.3°F/−34.1°C
Vapor Pressure: 2749 mmHg at 32°F/0°C (53.155 psia)
6780 mmHg at 70°F/21.1°C (99.7 psia)
8000 mmHg at 99.9°F/37.7°C (154.9 psia)
Water Solubility: 0.729 g/100g H_2O at 68°F/20°C

II. CHEMICAL REACTIVITY

This material reacts vigorously with a wide variety of materials and over a broad range of conditions. These reactions are discussed in the *Chlorine Manual* published by the Chlorine Institute, Inc. For further information contact: Pioneer Chlor Alkali Company, St. Gabriel, LA (504) 642-1800 (East/Central) or Henderson, NV (702) 565-8781 (West)

III. STABILITY

This material reacts spontaneously and often violently with a variety of substances at both normal and elevated temperatures. Liquid chlorine vaporizes at ambient temperatures and atmospheric pressure.

IV. FIRE HAZARD

Chlorine is not considered flammable but will support combustion. Chlorine vapors are severly irritating to the respiratory tract.

Liquid chlorine will ignite solid aluminum at −31.0°F/−34.5°C, however, solid aluminum is resistant to dry chlorine gas to about 250°F/120°C. Aluminum powder will ignite spontaneously in dry chlorine at −4°F/−20°C. Carbon steel will ignite at about 482°F/250°C although finely divided iron can ignite at room temperature. Thus, welding or cutting of steel lines should never be attempted without thorough purging of all chlorine. The chlorine-steel ignition temperature is much lower if moisture, ferric chloride or organics are present.

V. FIREFIGHTING TECHNIQUE

If possible, immediately remove chlorine containers from the fire area. Tank cars and barges should be disconnected and pulled out of the fire area.

Vapors are extremely irritating to the respiratory tract and may cause breathing difficulty and pulmonary edema. Prevent human exposure to fire, smoke, fumes, or products of combustion. Evacuate nonessential personnel from the fire area. Maintain a safe distance from the fire and container storage areas because excessive heat may cause containers to rupture violently.

When there is a potential for exposure to smoke, fumes or products of combustion, firefighters should wear full-face, self-contained breathing apparatus and impervious clothing (such as gloves, hoods, suits and rubber boots).

A chlorine fire can be extinguished only by stopping the flow of chlorine gas. If it is necessary to enter the area to locate and stop the flow of chlorine gas, proceed with caution using a water spray to direct the escaping gas away from personnel involved in the gas flow shut-off. Use water to cool fire-exposed containers.

VI. TOXICOLOGY

DANGER—POISON

Liquid chlorine is a severe skin irritant. Dermal contact will produce burns. Contact with the eyes will cause severe damage. The liquid will vaporize when exposed to atmospheric pressure and ambient temperatures. Chlorine gas is a severe respiratory irritant. It is so intensely irritating that concentrations above three to five parts per million (by volume) in air are readily detected by the normal person. At higher concentrations, the severe irritating effect of the gas makes it unlikely that any person will remain willingly in a chlorine contaminated atmosphere for extended periods.

In case of suspected poisoning, refer to the procedure and emergency contacts in Section VII—FIRST AID.
In case of spillage, refer to procedure and emergency contacts in Section IX—SPILL HANDLING.
In case of suspected animal poisoning, call a veterinarian or call (800) 424-9300 (CHEMTREC).
In case of contamination with other materials, call (800) 424-9300 (CHEMTREC).
NOTE: For CHEMTREC assistance when calling from Washington, D.C., Virgin Islands, Guam, Samoa, Puerto Rico or Alaska, call collect, day or night (202) 483-7616.

(6/91) PRINTED IN U.S.A.

PIONEER
PIONEER CHLOR ALKALI COMPANY, INC.

Ingestion
Due to the physical properties of chlorine, ingestion is extremely unlikely. Ingestion of liquid would cause severe internal injury.

Skin Contact
Liquid chlorine in contact with the skin will cause frost type burns. In high concentrations the gas will irritate the skin.

Eye Contact
Splashes of the liquid in the eye may cause severe burns and chemical conjunctivitis. Exposure to low concentrations of the vapor is severely irritating to the eyes and may cause a stinging or burning sensation, redness, and lacrimation.

Inhalation
Chlorine gas will irritate the mucous membranes and the respiratory system. Inhalation of large amounts causes coughing and labored breathing. Excessive exposure may result in general excitement of the person affected and will be accompanied by restlessness, throat irritation, sneezing and copious salivation. The symptoms of exposure to high concentrations are retching and vomiting followed by difficult breathing. In extreme cases, the difficulty of breathing may increase to the point of death.

T-4054

VII. FIRST AID

CALL A PHYSICIAN IMMEDIATELY

If a known exposure occurs or if poisoning is suspected, do not wait for symptoms to develop. Immediately initiate the recommended procedures below. Simultaneously contact a Poison Control Center, a physician or the nearest hospital. Inform the person contacted of the type and extent of exposure, describe the victim's symptoms, and follow the advice given. For additional information call, CHEMTREC (800) 424-9300. For CHEMTREC assistance when calling from Washington D.C., Virgin Islands, Guam, Samoa, Puerto Rico or Alaska, call collect, day or night (202) 483-7616.

Ingestion
Do *NOT* induce vomiting. Immediately give large quanities of water. If vomiting does occur, give fluids again. Do not induce vomiting or give anything by mouth to an unconscious person. Call a physician or the nearest Poison Control Center immediately.

Skin Contact
Immediately remove contaminated clothing and shoes under a safety shower. Flush all affected areas with large amounts of water for at least 15 minutes. Do not attempt to neutralize with chemical agents. Obtain medical advice immediately. Wash clothing before reuse.

Eye Contact
Immediately flush the eyes with large quantities of running water for a minimum of 15 minutes. Hold the eyelids apart during the flushing to ensure rinsing of the entire surface of the eye and lids with water. Do not attempt to neutralize with chemical agents. Obtain medical attention as soon as possible. Oils or ointments should not be used. Continue the flushing for an additional 15 minutes if the physician is not immediately available.

Inhalation
Remove from contaminated atmosphere. If breathing has ceased, clear the victim's airway and start mouth-to-mouth artificial respiration, which may be supplemented by the use of a bag-mask respirator or a manually triggered oxygen supply capable of delivering one liter/second or more. If the victim is breathing, oxygen may be delivered from a demand-type or continuous-flow inhalator, preferably with a physician's advice.

VIII. INDUSTRIAL HYGIENE

Ingestion
All food should be kept in a separate area away from the storage/use location. Eating, drinking and smoking should be prohibited in areas where there is a potential for significant exposure to this material. Before eating, hands and face should be thoroughly washed.

Skin Contact
Skin contact with liquid or high concentration of gas must be prevented through the use of impervious clothing, gloves and footwear, selected with regard for use condition exposure potential.

Eye Contact
Eye contact with liquid or gas must be prevented through the use of non-vented, gas tight chemical safety goggles. Whenever splashing of liquid chlorine could possibly occur, a face shield must also be used.

Vapors cause eye irritation (see inhalation).

Inhalation
Where adequate ventilation is not available and use conditions could release liquid or gas, inhalation must be prevented through the use of NIOSH-approved respirators. Respirator selection must address the potential for exposure under the use conditions.

Either half-face respirators in combination with gas tight chemical goggles or full-face respirators may be required in certain use conditions to prevent eye contact or irritation. Entry into unknown concentrations requires the use of positive-pressure, full-face self-contained respirators or supplied air line respirators with escape pack.

Exposure Limit Information
The Federal OSHA Permissable Exposure Limit (PEL) for chlorine is a ceiling limit of .5 ppm (1.5mg/m^3). [1]

The American Conference of Governmental Industrial Hygienists has recommended a Threshold Limit Value (TLV) Time Weighted Average of .5 ppm and a Short Term Exposure Limit (STEL) of 1.0 ppm for chlorine. [2]

PEL's and TLV's refer to airborne concentrations measured in the breathing zone by appropriate sampling techniques.

IX. SPILL OR LEAK HANDLING

Make sure all personnel involved in the spill or leak cleanup are aware of the hazards associated with chlorine and follow good industrial hygiene practices (refer to Section VIII.) Only trained personnel equipped wtih gas masks and/or self-contained breathing apparatus should attempt repairs on leaking chlorine equipment. Protective clothing should be worn to prevent skin and eye contact.

Occasionally containers may develop leaks. In such cases, immediate steps should be taken to overcome the trouble as chlorine leaks become progressively worse if not corrected promptly.

Small leaks may be readily located by spraying potential leak areas with ammonium hydroxide solution. Ammonium chloride (a dense white fume) will form if chlorine is leaking.

— Never apply water to a chlorine leak. The application of water makes chlorine much more corrosive.
— If a leak develops in a container within a congested area, every effort should be made to transfer the leaking container to a place where fewer people will be exposed.

— A leaking chlorine container should be so shifted that gaseous rather than liquid chlorine will escape.
— A small liquified chlorine spill or leak can be handled routinely by passing chlorine through an alkaline solution such as dilute caustic soda. Do not attempt to immerse the chlorine container into the solution.
— Emergency kits are available for handling chlorine leaks in cylinders, tanks cars and tank trailers. All personnel must be trained in their particular usage. This information is available form the Chlorine Institute.

Large leaks must be handled according to a predetermined plan. Part of this plan should include Section V: FIREFIGHTING TECHNIQUE.

IN CASE OF EMERGENCY, CALL, DAY OR NIGHT
(800) 424-9300 (CHEMTREC)
FROM WASHINGTON, D.C., VIRGIN ISLANDS, GUAM, SAMOA, PUERTO RICO OR ALASKA, CALL COLLECT DAY OR NIGHT
(202) 483-7616 (CHEMTREC)

X. CORROSIVITY TO MATERIALS OF CONSTRUCTION

Dry chlorine at moderate temperatures is not considered corrosive to most metals. An exception is titanium which can ignite upon contact with dry chlorine even at ambient temperature.

Dry chlorine becomes corrosive to metals at elevated temperatures. When selecting a material of construction for handling hot chlorine, even when dry, caution must be observed.

Wet chlorine is corrosive to most of the common metallic materials of construction. Titanium is suitable for many applications involving wet chlorine.

FOR INFORMATION CONTACT:
(East or Central)
Pioneer Chlor Alkali Company, Inc.
P.O. Box 23
St. Gabriel, Louisiana 70776
Tel. (504) 642-1800

(West)
Pioneer Chlor Alkali Company, Inc.
P.O. Box 86
Henderson, NV 89015
Tel. (702) 565-8781

Corrosion problems with chlorine are varied and dependent on individual conditions.

XI. STORAGE REQUIREMENTS

Cylinders and ton containers should be stored in a dry area away from sources of heat and protected from direct sunlight and moisture. They should be segregated form other compressed gases and *never stored near hydrocarbons, finely divided metals, turpentine, ether, anhydrous ammonia or other flammable materials.*

Exercise due caution to prevent damage to or leakage from the container.

The following safety facilities should be readily accessible in all areas where this material is handled or stored:

Safety showers—with quick opening valves which stay open. Water should be supplied through insulated and heat traced lines to prevent freeze-ups in cold weather.

Eye wash fountains—or other means of washing the eyes with a gentle flow of tap water.

XII. DISPOSAL OF UNUSED MATERIAL

For assistance in disposing of unused material, contact Pioneer Chlor Alkali Co. St. Gabriel, LA (504) 642-1800 (East/Cent.) or Henderson, NV (702) 565-8781 (West)

XIII. DISPOSAL OF CONTAINER

Follow Pioneer Instructions for return of bulk containers.

XIV. ADDITIONAL REGULATORY STATUS INFORMATION

All components of this product that are required to be on the TSCA Inventory are listed on the inventory.

Not listed as carcinogen - IARC, NTP, OSHA.

SOURCE OF ADDITIONAL INFORMATION

Chlorine Manual, The Chlorine Insitute, New York, N.Y. (1969) NIOSH Criteria Document #76-170, (May 1976)

[1]29 CFR 1910.1000

[2]The American Conference of Governmental Industrial Hygenists (ACGIH). 1991 ACGIH: Cincinnati, Ohio.

CUTRINE®-PLUS

ALGAECIDE/HERBICIDE

Pat. No. 3,930,834 EPA Reg. No. 8959-10 EPA Est. No. 42291-GA-1

FOR USE IN LAKES – POTABLE WATER RESERVOIRS FARMS, FISH AND INDUSTRIAL PONDS, FISH HATCHERIES AND RACEWAYS, CROP AND NON-CROP IRRIGATION CONVEYANCE SYSTEMS, DITCHES, CANALS AND LATERALS

ACTIVE INGREDIENTS:	
COPPER AS ELEMENTAL	*9.0%
INERT INGREDIENTS:	91.0%
TOTAL	100.0%

CUTRINE-PLUS contains 0.909 lbs. of elemental copper per gallon.
*From mixed Copper-Ethanolamine complexes

KEEP OUT OF REACH OF CHILDREN
DANGER

FIRST AID

If inhaled:	- Move person to fresh air. - If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to- mouth if possible. - Call a poison control center or doctor for further treatment advice.
If on skin or clothing:	- Take off contaminated clothing. - Rinse skin immediately with plenty of water for 15-20 minutes. - Call a poison control center or doctor for treatment advice.
If in eyes:	- Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. - Call a poison control center or doctor for treatment advice.
If swallowed:	- Call a poison control center or doctor immediately for treatment advice. - Have person sip a glass of water if able to swallow. - Do not induce vomiting unless told to do so by a poison control center or doctor. - Do not give anything by mouth to an unconscious person.

Have the product container or label with you when calling a poison control center or doctor, or going for treatment.

Note to Physician: Probable mucosal damage may contraindicate the use of gastric lavage.

See Additional Precautions on Back Panel

FIVE GALLONS (18.92 Liters)

applied biochemists
GERMANTOWN, WISCONSIN 53022
1-800-558-5106
www.appliedbiochemists.com

Material Safety Data Sheet

EMERGENCY

FOR CHEMICAL EMERGENCY: SPILL, LEAK, FIRE, EXPOSURE OR ACCIDENT CALL
CHEMTREC - DAY or NIGHT - (800) 424-9300

Product Name: **AB CUTRINE PLUS**

SECTION I - GENERAL INFORMATION

Manufacturer's Name: APPLIED BIOCHEMISTS
W175 N11163 Stonewood Drive
Suite 234
Germantown, WI 53022-4799
(800) 558-5106

Trade Name & Synonyms:	AB CUTRINE PLUS
Chemical Name & Synonyms:	CHELATED ELEMENTAL COPPER
Generic Description:	COPPER - ALGICIDE
Formula:	PROPRIETARY
D.O.T. Proper Shipping Name:	CORROSIVE LIQUID NOS (Copper Ethanolamine Complex)
D.O.T. Hazard Class:	EIGHT
U.N. or N.A. Identification #:	UN 1760, PG III
D.O.T. Emergency Response Guide (1996 ed.):	154

Hazardous Mat'ls ID System Values (HMIS):	Health -2	Flammability -0	Reactivity -1	Personal Protection -B
Nat'l Fire Protection Assn. (NFPA 704M):	Health -1	Flammability -0	Reactivity -1	Specific Hazard:

SECTION II - HAZARDOUS INGREDIENTS

Hazardous Component(s)	CAS#	PEL	TLV
Copper Carbonate	12069-69-1	1 mg/m^3	1 mg/m^3
Monoethanolamine	141-43-53	ppm	3 ppm
Triethanolamine	102-71-6	NOT ESTABLISHED	NOT ESTABLISHED

Ingredients listed in this section have been determined to be hazardous as defined in 29 CFR 1910.1200. Materials determined to be health hazards are listed if they comprise 1% or more of the composition. Materials identified as carcinogens are listed if they comprise 0.1% or more of the composition. Information on proprietary materials is available as provided in 29 CFR 1910.1200 (i) (1).

SECTION III - PHYSICAL DATA

Boiling Point (F):	212°F	Specific Gravity (water = 1):	1.1 - 1.2
Vapor Pressure (mm Hg):	NOT DETERMINED	% Volatile (by Volume):	NOT DETERMINED
Vapor Density (air = 1):	> 1	Evaporation Rate:(Ether = 1)	< 1
Melting Point (F):	NOT APPLICABLE	pH:	10.0-11.0
Solubility in Water:	MISCIBLE IN WATER		
Appearance & Odor:	BLUE VISCOUS LIQUID. SLIGHT AMINE ODOR.		

SECTION IV - FIRE & EXPLOSION DATA

Flash Point :	NOT DETERMINED Method: TAG CLOSED CUP
Extinguishing Media:	CO_2, H_2O, DRY CHEMICAL. POLYMER FOAM FOR LARGE FIRES
Special Fire Fighting Procedures:	USE NIOSH APPROVED SELF-CONTAINED BREATHING APPARATUS.
Unusual Fire & Explosion Hazards:	NONE

SECTION V - REACTIVITY DATA

Stability -	_____Unstable __X__Stable
Conditions to Avoid:	AVOID CONTACT WITH STRONG ACIDS AND NITRATES.
Incompatibility (Materials to Avoid):	STRONG ACIDS AND NITRITES.
Hazardous Decomposition Products:	OXIDES OF NITROGEN
Hazardous Polymerization:	_____Will Occur __X__Will Not Occur
Conditions to Avoid:	CONTACT WITH STRONG ACIDS AND NITRITES.

AB CUTRINE PLUS

SECTION VI - HEALTH HAZARD DATA

Acute Health Hazards: $LD_{50(RAT)}$ = 1930mg/Kg: CORROSIVE TO SKIN
Chronic Health Hazards: NONE KNOWN
Signs & Symptoms of Exposure: CONTACT WITH SKIN AND EYES, VAPORS OR MISTS MAY CAUSE IRRITATION WITH PAIN, COUGHING AND DISCOMFORT TO EYES, NOSE, THROAT AND CHEST.
Medical Conditions Generally Aggravated by Exposure: MAY CAUSE SKIN SENSITIZATION.

Chemical Listed as Carcinogen or Potential Carcinogen by:

National Toxicology Program:	Yes:	No:	✓
I.A.R.C. Monographs:	Yes:	No:	✓
O.S.H.A.	Yes:	No:	✓

Emergency & First Aid Procedures: FOR PRINCIPLE ROUTE OF ENTRY, SEE APPROPRIATE EMERGENCY PROCEDURES BELOW.
NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

Route of Entry:
- Inhalation: REMOVE TO FRESH AIR. ADMINISTER OXYGEN IF NECESSARY.
- Eyes: FLUSH WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES. GET MEDICAL ATTENTION.
- Skin: FLUSH WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES. WASH CLOTHES THOROUGHLY BEFORE REUSE.
- Ingestion: IF INGESTED, GET IMMEDIATE MEDICAL ATTENTION.

SECTION VII - SPILL OR LEAK PROCEDURES

Steps to be Taken in Case Material is Released or Spilled: SOAK UP WITH APPROPRIATE ABSORBENT THAT DOES NOT CONTAIN CLAYS. GROUND CORNCOB IS THE IDEAL ABSORBENT. DO NOT FLUSH INTO SANITARY SEWERS.
Waste Disposal Methods: INCINERATE IN A FURNACE. MORE THAN 5 (FIVE) GALLONS, CONTACT LOCAL AUTHORITIES FOR DIRECTIONS.

SECTION VIII - SPECIAL PROTECTION AND CONTROL MEASURES

Respiratory Protection (Specify Type): NOT REQUIRED

Ventilation - Local Exhaust: ACCEPTABLE; Special Exhaust:: NOT REQUIRED
Mechanical Exhaust: ACCEPTABLE; Other Exhaust: NOT REQUIRED

Protective Equipment - Gloves: RUBBER; Eye Protection: SPLASH GOGGLES OR FACE SHIELD

Other Protective Equipment: EYEWASH AND SAFETY SHOWER SHOULD BE AVAILABLE WITHIN THE IMMEDIATE WORKING AREA.
Work or Hygienic Practices: USE SAFE CHEMICAL HANDLING PROCEDURES SUITABLE FOR THE HAZARDS PRESENTED BY THIS MATERIAL.

SECTION IX - SPECIAL PRECAUTIONS

Precautions to be Taken in Handling and Storage: STORE AT TEMPERATURES BETWEEN 32°F AND 100°F. DO NOT STORE IN DIRECT SUNLIGHT
Other Precautions: DO NOT CONTAMINATE WATER, FOOD OR FEED BY STORAGE, DISPOSAL OR CLEANING OF EQUIPMENT. STORE IN A COOL, DRY PLACE. KEEP OUT OF REACH OF CHILDREN

JK Date of Last Revision: 10/08/03

APPENDIX C – CALCULATIONS AND COST ESTIMATES

NYWD Forbestown WTP Operators Record - Solids Production Calculation
(by LCK 06/1/15, updated 07/21/15)

2013	RW to Plant Mgal	RW Monthly Avg Turbidity NTU	RW Solids d.s. lb	Coagulant (Alum. Poly Blend) lb	Coagulant Solids * d.s. lb	Total Solids Produced d.s. lb	
Jan	9.89	3	322	138.67	69	391	
Feb	8.613	1.4	131	88.85	44	175	
March	8.117	2.8	246	96.93	48	295	
April	9.943	3.2	345	160.21	80	425	
May	14.895	6.3	1017	129.24	65	1082	
June	18.258	14.9	2950	169.63	85	3034	
July	23.917	14.1	3656	204.65	102	3759	
Aug	20.628	11.6	2594	169.63	85	2679	
Sept	15.8371	8.3	1425	123.86	62	1487	
Oct	12.156	3.7	488	140.01	70	558	
Nov	9.176	1.7	169	138.67	69	238	
Dec	10.89	1.9	224	146.74	73	298	
		2013 Year	**13,600**		**900**	**14,400**	(rounded)
		Annl Avg Day	**38**		**3**	**40**	ds lb/day

* Based on Alum. Poly Blend Percent Solids (by weight) of 0.5 lb dry solids (d.s.) per lb of coagulant used (per MSDS sheet's stated physical properties)
RW SS = Flow*Turbidity (NTU)*1.3*8.34, where 1.3 is the conversion factor for NTU to mg/L dry solids
Coagulant SS = Coagulant Use (lb/month) * 0.4 lbs dry solids/lb coagulant

Note: 2014 was first year with no irrigation flows during due to drought conditions

2014	RW to Plant Mgal	RW Monthly Avg Turbidity NTU	RW Solids d.s. lb	Coagulant (Alum. Poly Blend) lb	Coagulant Solids * d.s. lb	Total Solids Produced d.s. lb	
Jan	8.664	1.7	160	157.90	79	239	
Feb	7.097	6.1	469	91.55	46	515	
March	8.34	5.1	461	123.97	62	523	
April	10.054	5.8	632	150.78	75	708	
May	14.301	3.8	589	241.84	121	710	
June			755		200	**960**	Zero or bad data; used monthly total = August 2014 (rounded)
July			755		200	**960**	Zero or bad data; used monthly total = August 2014 (rounded)
Aug	17.852	3.9	755	405.63	203	958	
Sept	15.409	3.6	601	240.99	120	722	
Oct	12.322	2.1	281	210.03	105	386	
Nov	9.31	3.9	394	111.74	56	450	
Dec	10.093	7.4	810	188.48	94	904	
		2014 Year	**6,700**		**1,400**	**8,000**	(rounded)
		Annl Avg Day	**19**		**4**	**22**	

Based on 2013 Annual Average and Annual Solids Production

Avg Day D.S. production	**40**	**lbs d.s./day**	(=Annl Avg Day)
Sludge Loading Rate	**8**	**lbs d.s./SF**	(range from 8.2 to 16.4 lb d.s./SF; with lower for wet regions)
Filling Cycle	**12**	months	(months to fill)
	360	days	

Effective Lagoon Area Needed	**1800**	**SF/year**

Lagoon 1 Width	**50**	**ft**	6500 SF effective area available
Lagoon 1 Length Needed	36.0	ft	(total length avail = 130 ft)
Lagoon 2 Width	**55**	**ft**	4950 SF effective area available
Lagoon 2 Length Needed	32.7	ft	(total length avail = 90 ft)

Year D.S. production	**14,400**	**lbs d.s./year**	for 2013
Sludge Loading Rate	**16.4**	**lbs d.s./SF**	(range from 8.2 to 16.4 lb d.s./SF; with lower for wet regions)
Filling Cycle	**12**	months	(months to fill)

Effective Lagoon Area Needed	**878**	**SF/year**	18%

Lagoon 1 Width	**50**	**ft**	6500 SF effective area available
Lagoon 1 Length Needed	17.6	ft	(total length avail = 130 ft)
Lagoon 2 Width	**55**	**ft**	4950 SF effective area available
Lagoon 2 Length Needed	16.0	ft	(total length avail = 90 ft)

NYWD Forbestown WTP Operators Record - Backwash Waste Info
(by LCK 07/9/15)

2013	BW Total (Mgal)	Month BW (gal/month)	BW Avg Day (Mgal)	BW Avg Day (gal/day)
Jan	0.505292	505,292	0.016300	16,300
Feb	0.360880	360,880	0.012889	12,889
March	0.314508	314,508	0.010145	10,145
April	0.399556	399,556	0.013319	13,319
May	0.655300	655,300	0.021139	21,139
June	0.707868	707,868	0.023596	23,596
July	0.930500	930,500	0.033017	33,017
Aug	0.805308	805,308	0.025978	25,978
Sept	0.674788	674,788	0.022493	22,493
Oct	0.504692	504,692	0.016280	16,280
Nov	0.413148	413,148	0.013772	13,772
Dec	0.465416	465,416	0.015013	15,013
2013 Year	6.231964	6,231,964		
Annl Avg Day	0.017311		0.018876	18,876

Filling Cycle	**3**	months	(months to fill)
BWW Flow =	**1,698,881**	**gallons/fill cycle**	(based on annl avg day volume)
Lagoon 1 Vol	197,200	gallons	
Lagoon 2 Vol	142,900	gallons	
Total Lagoon Vol	**340,100**	**gallons**	

Note: 2014 was first year with no irrigation flows during due to drought conditions

2014	BW Total (Mgal)	Month BW (gal/month)	BW Avg Day (Mgal)	BW Avg Day (gal/day)	
Jan	0.380368	380,368	0.012270	12,270	
Feb	0.315108	315,108	0.011254	11,254	
March	0.511788	511,788	0.016509	16,509	
April	0.386864	386,864	0.012895	12,895	
May	0.570252	570,252	0.018395	18,395	
June	0.687780	687,780	0.022186	22,186	Zero or bad data; assumed monthly total = August 2014 (rounded)
July	0.687780	687,780	0.022186	22,186	Zero or bad data; assumed monthly total = August 2014 (rounded)
Aug	0.687780	687,780	0.022186	22,186	
Sept	0.688080	688,080	0.022936	22,936	
Oct	0.595336	595,336	0.019204	19,204	
Nov	0.479308	479,308	0.015977	15,977	
Dec	0.485204	485,204	0.015652	15,652	
2014 Year	6.095280	6,095,280			
Annl Avg Day	0.016931		0.018125	18,125	

Alternative 4 - Operate Settling Ponds in Parallel				
Item	**Unit**	**Quantity**	**Est. Unit Cost**	**Cost**
Mobilization	LS	1	$ 3,000	$ 3,000
Installation (25% of material cost)	LS	1	$ 2,000	$ 2,000
8-IN PVC Pipe	LF	170	$ 100	$ 17,000
8-IN Butterfly Valves	EA	5	$ 1,000	$ 5,000
CONSTRUCTION SUBTOTAL			(rounded)	**$ 27,000**
Contingency		40%	of construction	$ 10,800
SUBTOTAL *(construction + contingency)*				**$ 37,800**
Engineering / CMS		15%		$ 5,670
Permitting & Licensing & Mitigation		5%		$ 1,890
Admin / Legal		5%		$ 1,890
TOTAL ESTIMATED PROJECT COST				**$ 47,300**

Alternative 8 - Source Analysis (O&M Additional Monthly Costs)				
Item	**Unit**	**Quantity**	**Est. Unit Cost**	**Cost**
Materials/Equipment to Collect Water Samples	EA Site	6	$ 100	$ 600
Sample Collection (labor)	HR	4	$ 100	$ 400
Lab Testing Analyses (Aluminum and Turbidity)	EA	12	$ 15	$ 180
Review and Report Lab Test Results	LS	1	$ 600	$ 600
Additional Monthly Costs			(rounded)	**$ 1,800**
TOTAL ANNUAL ADDITIONAL O&M COSTS				**$ 21,600**

Option 1B- Forbestown 36-Inch Pipeline Pipeline Estimated Costs of Construction (45 cfs capacity)				
Item	**Unit**	**Quantity**	**Est. Unit Cost**	**Cost**
Mobilization (5% of construction cost)	LS	1	$ 190,000	$ 190,000
Installation (25% of material cost)	LS	1	$ 946,000	$ 946,000
Clearing and Grubbing (2% of construction cost)	LS	1	$ 76,000	$ 76,000
WTP supply during construction	LS	1	$ 50,000	$ 50,000
HDPE ADS Piping 36-Inch (10 Miles) **	LF	53,000	$ 66	$ 3,498,000
Catch Basin (Oldcastle Precast)48"x48" *	EA	53	$ 2,100	$ 111,300
Channel Transitions (located at falls)	EA	2	$ 15,000	$ 30,000
Parshall Flume	EA	7	$ 8,000	$ 56,000
Fittings***	LS	1	$ 87,000	$ 87,000
CONSTRUCTION SUBTOTAL			(rounded)	**$ 5,045,000**
Contingency		20%	of construction	$ 1,009,000
SUBTOTAL *(construction + contingency)*				**$ 6,054,000**
Engineering		10%		$ 606,000
CM/Inspection		10%		$ 606,000
Permitting & Licensing & Mitigation		5%		$ 303,000
Admin / Legal		5%		$ 303,000
TOTAL ESTIMATED PROJECT COST				**$ 7,872,000**

Breakdown of Items Costs for Option 1B

***Catch Basin**						
DI Custom Base 48"x48" Pedestrian Frame	EA	53	$	988	$	52,363
Pedestrian Grate	EA	53	$	503	$	26,665
Freight	LS	11	$	900	$	9,900
TAX				10%	$	8,893
Contractor Mark Up				10%	$	9,782
TOTAL					$	107,603
Unit Price					**$**	**2,100**

****High Density Polyethelyne Pipe ASD**						
36" HDPE ADS (Corrugated)	LF	53,000	$	30	$	1,590,000
Crushed Rock (6"+18"=24" depth)	CY	16,296	$	40	$	651,852
Imported Soil (21" depth)	CY	14,259	$	40	$	570,370
TAX				10%	$	224,185.19
Contractor Mark Up				15%	$	455,461
TOTAL					$	3,491,869
Unit Price Installed					**$**	**66**

*****HDPE Fittings**						
Catch Basin Connections	EA	53	$	500	$	26,500
Bend Fittings (one fitting every 100 feet of pipe)	EA	530	$	75	$	39,750
Tie-in Connections (at Costa Creek & WD-6)	LF	2	$	1,000	$	2,000
TAX				10%	$	6,825
Contractor Mark Up				15%	$	11,261
TOTAL					**$**	**87,000**