

McKinleyville Community Services District



ANNUAL WASTEWATER MANAGEMENT FACILITY MONITORING & DISCHARGE REPORT FOR 2011

NPDES No. CA0024490
WDID No. 18820840HUM

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March 1, 2012

Regional Water Quality Control Board, North Coast Region
5550 Skylane Blvd., Suite A
Santa Rosa, California 95403

McKINLEYVILLE COMMUNITY SERVICES DISTRICT WASTEWATER MANAGEMENT FACILITY ANNUAL REPORT, FOR 2011

The McKinleyville Community Services District operates the wastewater collection, treatment, and disposal facilities that serve 6265 customer units in the unincorporated area of McKinleyville in Northern Humboldt County. The system operated under Order No. R1-2008-0039 until April 18, 2011. On that date the permit was renewed under order number WQ 2011-0008-DWQ, National Pollution Discharge Elimination System (NPDES) Permit No. CA0024490, WDID No. 1B820840HUM and issued by the California State Water Resources Control Board.

In 2010 the District requested a Monitoring and Reporting Plan Revision, a Cease and Desist Order and conducted a Water Effects Ration Study for Copper. Due to the outcome of those requests and the study Regional Board staff offered a renewal of the District NPDES permit. The permit was accepted by the state board at their April 2011 meeting.

Tables 1, 2 and 3 summarize the existing and previous permit elements for reference.

Table 1. Effluent Limitations for Discharge Point 001 from January 1, 2011 through April 18, 2011

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Biochemical Oxygen Demand 5-day @ 20°C	mg/L	45	65			
	lbs/day	441	637			
Total Suspended Solids	mg/L	83				
	lbs/day	931				
pH	pH Units				6.5	8.5
Settleable Matter	mg/L	0.1		0.2		
Chlorine Residual	mg/L	0.01		0.02		
Nitrate as Nitrogen	mg/L	10				
Copper	ug/L	[1]		[1]		
Lead	ug/L	[1]		[1]		
α-BHC	ug/L	0.0039		0.0078		
4,4'-DDT	ug/L	0.00059		0.0012		
bis(2-ethylhexyl) phthalate	ug/L	1.8		3.6		

2,3,7,8-TCDD equivalents	pg/L	0.013		0.026		
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^[1] Lead and Copper Limitations are calculations of hardness and concentration derived from a table of Hardness Dependant Metals

Table 2. Effluent Limitations for Discharge Point 001 from April 19, 2011 to present

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Biochemical Oxygen Demand 5-day @ 20°C	mg/L	45	65			
	lbs/day	604	873			
Total Suspended Solids	mg/L	83				
	lbs/day	1108				
pH	pH Units				6.5	8.5
Settleable Matter	mg/L	0.1		0.2		
Chlorine Residual	mg/L	0.01		0.02		
Nitrate as Nitrogen	mg/L	10				
4,4'-DDT	ug/L	0.00059		0.0027		
bis(2-ethylhexyl) phthalate	ug/L	1.8		3.6		

Other changes that occurred due to the permit renewal include the elimination of monitoring location at the Backswamp Wetlands and Overflow from the Hiller Storm Water Treatment Wetlands.

Table 3. Summary of Monitoring Location Names and Descriptions effective after April 18, 2011.

Discharge Point Name	Monitoring Location Name	Monitoring Location Description
	M-INF	Treatment facility headworks
All	M-001	Chlorine contact chamber following dechlorination
001	M-002	Outfall to the Mad River under the Hammond Trail railroad bridge
002	M-003	Outfall to Mad River percolation ponds
003	M-004	Recycled wastewater irrigation of Lower Fisher Ranch
004	M-005	Discharge to land on Upper Fisher Ranch
005	M-006	Recycled wastewater irrigation of Hiller Storm Water Treatment Wetland
006	M-007	Recycled wastewater irrigation of Pialorsi Ranch
	M-008	Overflow from the Hiller Storm Water Treatment Wetland
	R-001	Mad River at Highway 101 Bridge
	R-002	North bank of Mad River as close as possible to the discharge point under the Hammond Trail Bridge
	W-001	Well M-1 adjacent to Fisher Road
	W-002	Well M-2 on the SW corner of the intersection of School and Fisher Roads
	W-006	Well M-6 south of W-9 and west of W-7
	W-007	Well M-7 in the upper portion of the Fisher parcel
	W-008	Well M-8 400 feet west of the intersection of School and Fisher Roads
	W-009	Well M-9 adjacent to School Road
	W-014	Well down gradient of the Hiller Storm Water Treatment Wetlands
	W-015	Well within the Lower Fisher Ranch irrigation area
	W-016	Well within the Pialorsi Ranch irrigation area

Enclosed is the 2011 Annual Report for McKinleyville Community Services District Wastewater Management Facility (WWMF). The compliance testing reports, tabular, graphical summaries and other operational data not sent with the monthly reports are included. Below in Table 1 are the Effluent Limitations for discharge to the Mad River thru April, 18, 2011. These limitations were in effect January 1, 2011 thru April 18, 2011 at which time the limitation were modified as part of Order No. WQ2011-0008-DWQ as represented in Table 2. During discharge to land the only constituents regulated are Biochemical Oxygen Demand (BOD), Total Suspended Solids (TSS) and Nitrate as Nitrogen in the Percolation Ponds.

Compliance:

Biochemical Oxygen Demand (BOD) Testing:

The effluent limitations for BOD testing are listed in Tables 1 and 2 and are the same for Discharge Point 001 Mad River, 002 Percolation Ponds, 003 Lower Fischer Ranch, 004 Upper Fischer Ranch, 005 Hiller Storm water Marsh and 006 Pialorsi Ranch. BOD limitations for 2011 were not exceeded.

Total Suspended Solids Testing (TSS):

The effluent limitations for NFR testing are listed in Tables 1 and 2 and are the same for Discharge Point 001 Mad River, 002 Percolation Ponds, 003 Lower Fischer Ranch, 004 Upper Fischer Ranch, 005 Hiller Storm water Marsh and 006 Pialorsi Ranch. NFR limitations for 2011 were not exceeded.

3x5 Total Coliform/ Disinfection Testing:

The effluent limitations for coliform 3x5 testing is a maximum monthly median, a most probable number (MPN) of 23 per 100 milliliters and a daily maximum of 230 MPN. and are the same for Discharge Point 001 Mad River, 002 Percolation Ponds, 003 Lower Fischer Ranch, 004 Upper Fischer Ranch, 005 Hiller Storm water Marsh and 006 Pialorsi Ranch. Coliform limitations for Monthly Median and Daily Maximum were in compliance in 2011.

Settleable Matter Testing:

The effluent limitations for settleable Matter testing are listed in Tables 1 and 2 and are for Discharge Point 001 Mad River. Settable Matter limitations for 2011 were not exceeded.

Chlorine Residual Testing:

The effluent limitations for Chlorine Residual testing are listed in Tables 1 and 2 and are for Discharge Point 001 Mad River. Residual limitations for 2011 were not exceeded.

Nitrate as Nitrogen Testing:

The effluent limitations for Nitrate as Nitrogen testing are listed in Tables 1 and 2 and are for Discharge Point 001 Mad River and 002 Percolation Ponds. Nitrate as Nitrogen limitations for 2011 were not exceeded.

Copper and Lead Testing:

The effluent limitations for Copper and Lead testing are listed in Table 1 and are for Discharge Point 001 Mad River. Copper and Lead limitations for 2011 were not exceeded and were both removed from the new permit.

α-BHC; 4,4'-DDT; bis(2-ethylhexyl) phthalate; carbon tetrachloride and 2,3,7,8-TCDD equivalents Testing:

The interim effluent limitations for these constituents are listed in Table 1 and the current limitations are listed in Table 2 and are for Discharge Point 001 Mad River. The limitations for 2011 were in compliance. 2,3,7,8-TCDD equivalents and α-BHC were removed from the new permit and carbon tetrachloride was added

Acute Toxicity Monitoring:

The acute toxicity monitoring bioassay criteria for Discharge Point 001 Mad River requires a 96-hour fish bioassay test conducted at M-001 WWMF Effluent. The method for conducting this test require the laboratory maintain the test sample the same pH and temperature as when the effluent sample was collected and that ammonia, pH and temperature be recorded on 24-hour intervals and reported with the bioassay test results. If the results of any 96-hour bioassay test are not in compliance a follow up test is required within 7 day of notification. The compliance for testing results are 90 percent survival 70 percent of the time based on any monthly median, and not less than 70 percent survival 100 percent of the time. Two test species were required, Ceriodaphnia dubia and Rainbow Trout. It was determined that the C. dubia was too sensitive to the buffering agent used to maintain the pH and mortality rates were beyond the limits set forth in the permit so pH control of the C. dubia was discontinued. The results for Acute Testing were in compliance in 2011 with the exception of a May test which was 75% median.

Non-Compliance:

Acute Toxicity Testing

The Requirement for Acute Toxicity testing is a minimum of 70% survival for any one test and median for all tests in one month of 90%. Four tests were conducted for April 2011 and results are as follows; 15%, 60%, 90% and 100% survival. Testing in April 2011 resulted in two violations; one exceedance for below the minimum of 70% survival in a single test and one exceedance for below the monthly median of 90% survival.

Conclusion

It has been a long standing observation that our ammonia levels are high and un-ionized ammonia cause toxicity in the right conditions. The District has identified a preferred alternative in the 20 Year Facility Plan to address ammonia toxicity and will begin planning and design in early 2012. The District is also considering other interim solutions to lowering the ammonia concentrations in the midterm and possibly augment the new design.

Chronic Toxicity Monitoring:

The chronic toxicity monitoring bioassay criteria for Discharge Point 001 Mad River requires a 96-hour static renewal or 96-hour static non-renewal testing. The sample is a 24-hour composite and is representative of the volume and quality of the discharge. The sampling is conducted at M-001 WWMF Effluent. Test species for chronic testing are a vertebrate, the fathead minnow, Pimephales promelas (larval survival and growth test), an invertebrate, the water flea, Ceriodaphnia dubia (survival and reproduction test), and a plant, the green alga, Selenastrum capricornutum (growth test). The District conducted chronic toxicity testing one time during the 2011 discharge season. The testing results for Acute Testing are detailed in Table 5

Table 5 Chronic Toxicity Testing for 2011

Dilution Water	Date	Test Species				
		Flathead minnow		Water flea		Algae
		Survival	Growth	Survival	Reproduction	Growth
Diluted w/ Lab Control Water	Feb. 2010	TUc = 2	TUc = 4	TUc = 1.33	TUc =>8	1

Accelerated Monitoring Requirements:

If the result of any chronic toxicity test exceeds the chronic toxicity trigger of 1.0 TUc and the testing meets all test acceptability criteria, the District shall initiate accelerated monitoring. Accelerated monitoring shall consist of four additional effluent samples, one test conducted approximately every week, over a four-week period. Testing shall commence within 14 days of receipt of the sample results of the exceedance of the chronic toxicity effluent limitation. The following protocol was used for accelerated monitoring and the TRE implemented and detailed in a study submitted during the 2009 discharge season.

Conclusion:

It was concluded that the mortality experienced in regular testing and verified in the monitoring study was due to ammonia. Ammonia toxicity has been addressed in the 20 Year Facility Plan and a preferred alternative has been identified for an upgrade that will reliably remove ammonia. Planning and design will be underway in early 2012 with construction to follow. An interim solution for ammonia removal will also be explored.

Other Projects and Commentary on the Treatment Process:

Bulrush Replanting Program:

In October of 2005 the treatment marshes were completed. Three years was estimated for the young plants to reach complete infill but during that 2005 winter we experienced severe weather conditions, increasing water levels in the ponds that caused the plants to drown or float out of the ground. That along with wildlife predation destroyed about 70% of the marsh seedlings. Spring planting has occurred to infill bare areas since the spring of 2006. Upon taking root the plants grow and propagate quite rapidly. Currently about 95% of Pond 4 is covered and 99% of Pond 5 is covered with mature Bulrush. Replanting took place in spring of 2011 to infill many remaining voids, using plants harvested from the Storm Water Marsh. The majority of the opened areas have been completely filled. Pond 4 should be in filled after one more transplanting. Transplanting in early spring ensures vigorous growth and has proven to produce the best success.

Treatment Process Trends:

The success of a particular process can be gauged by tracking the removal of BOD and TSS. Chart 1 demonstrates average BOD concentration in mg/L from 2002 through 2011. The average BOD in 2011 was well below 25 mg/L and continues to drop below 60mg/L, the level it was in 2005.

Chart 1 Annual Average BOD Concentrations

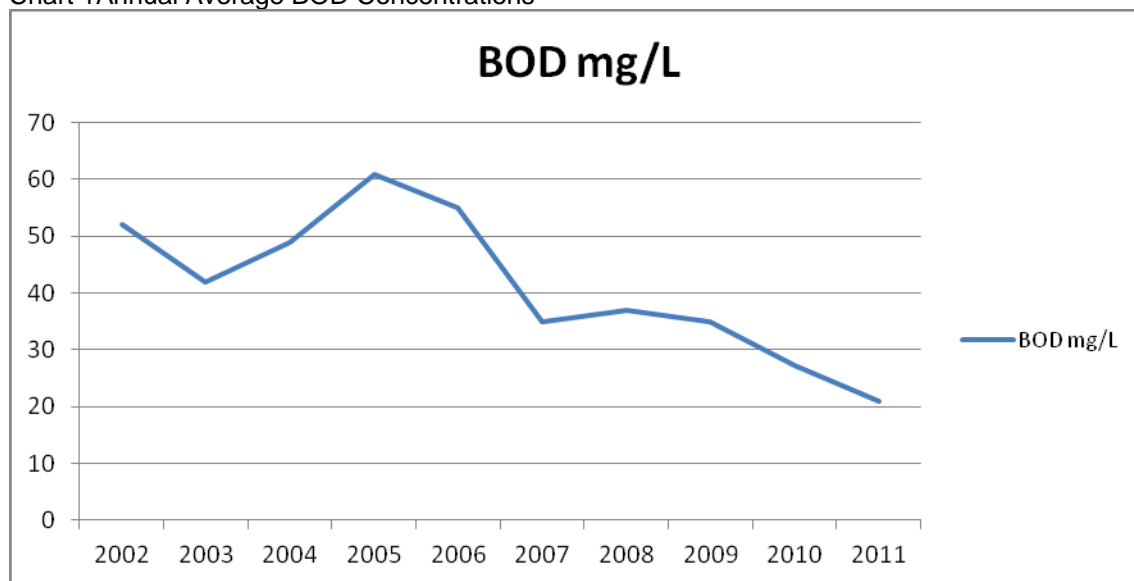


Chart 2 demonstrates average TSS concentration in mg/L from 2002 through 2011. The average TSS in 2011 was 30 mg/L and is well below 100mg/L, the level it was in 2005.

Chart 2 Annual Average TSS Concentrations

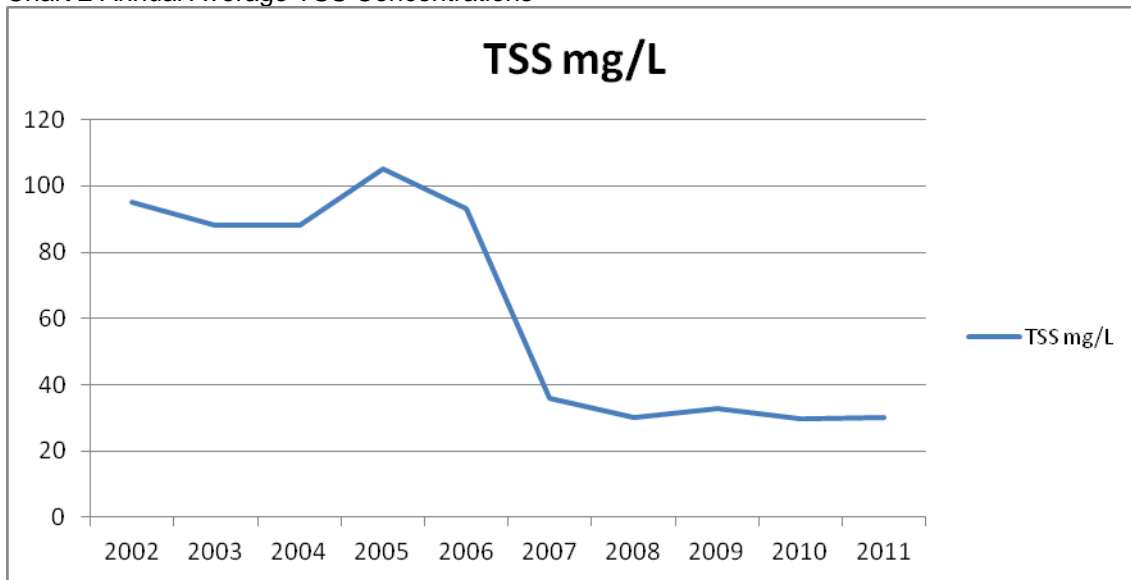
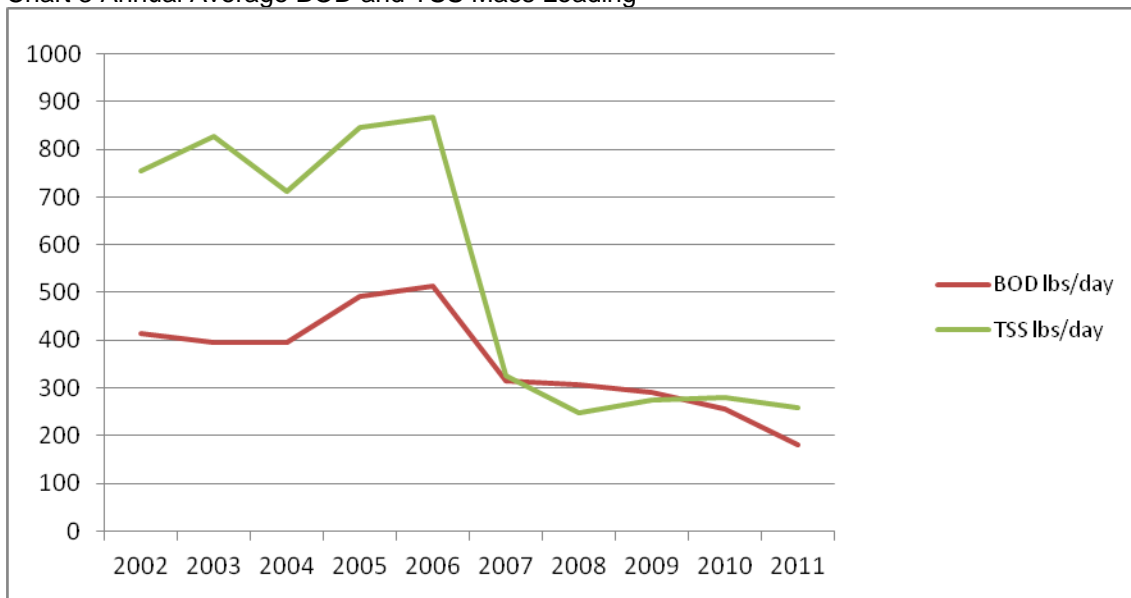


Chart 3 is the product of the flow and the concentration, is identified as mass loading and measured in pounds per day. BOD and TSS continue to trend lower.

Chart 3 Annual Average BOD and TSS Mass Loading



Charts 1-3 demonstrate the steady trend upward of BOD and TSS from 2002 through the time of the treatment marsh upgrade project completion in 2006. From 2006 through 2007 the performance of the treatment process can be demonstrated by the drastic improvement. From 2007 through 2011 the efficiency of the process continues to trend down.

Main Area of Concern:

Nitrogen Removal

Ammonia has been identified as the main area of concern as demonstrated through biological testing and the appearance of Nitrate in the ground water adjacent to the irrigation sites. Though our permit does not directly limit ammonia we recognize the importance of addressing the concern. The District is committed to reversing the trend of ammonia toxicity in our effluent stream. The 20 Year Facility Plan directly addresses and is dedicated to the removal by treatment of this constituent. The District is also exploring other interim alternative that have the potential to augment planned upgrades and plan to issue a RFP for viable alternatives to this serious concern.

Summary of Work Completed in 2011

Cottonwood Forest Reclamation Pilot Study: Attachment 1

In February 2011 a forest reclamation system pilot study work plan was completed and submitted to the RWQCB. The intent of the work plan was to provide the information necessary to prepare a pilot study for the establishment of an effluent reclamation forest. The purpose of the proposed pilot study was to plant and monitor a 1-acre poplar forest in the lower Fisher Ranch to evaluate the effectiveness of the forest's assimilation capacity to uptake effluent during the application period. The 1-acre forest was planted in May 2011 and monitoring wells were installed in June 2011. Data was collected weekly from the wells from June through September 2011.

Water Reclamation Study (WRS): Attachment 2

In February 2011 the WRS for the District WWMF was submitted to the RWQCB. The reclamation study addressed the evaluation of the water reclamation system at the District WWMF. The objective of this WRS is to evaluate whether the discharge of treated wastewater through the District's land irrigation system is in compliance with the WDR. This study includes, but is not limited to the following investigations of the District's land irrigation system:

- Site-specific lithology and soil transmissivity;
- Depth to groundwater across seasonal variations;
- Quality of recycled water for comparison to Department of Health Services Maximum Contaminant Levels;
- Vegetative or crop nutrient demand; and acreage required to prevent irrigation beyond the amount needed for vegetation or crops, accounting for evapotranspirative demand, the distribution uniformity of irrigation system, and leaching needed to prevent the buildup of salts in soil.

Sanitary Sewer Management Plan (SSMP)

In May for 2011 MCSD assisted by Freshwater Environmental completed our SSMP as required by our NPDES Permit. The SSMP is an operational plan that was designed by the state to help prevent sanitary sewer overflows. The full document can be located at the District's web site by following this link.

http://mckinleyvillecsd.com/sites/mckinleyvillecsd.com/files/documents/MCSD%20SSMP%20Final%200511811_0.pdf

Ammonia Concentration Reduction Plan: Attachment 3

In November 2011, SHN prepared a summary of the 2011 Treatment Pond Ammonia Concentration reduction efforts. The letter summarized the findings of the data collected after the July 2011 installation of submerged aquatic vegetation in Ponds 3 and 4 and the August 2011 installation of a fine bubble air diffuser between Ponds 3 and 4.

20 Year Facilities Plan

The District also completed significant work in 2011 on the 20-year facilities plan for the District WWMF. An initial draft of the facilities plan was published in August 2011 for a peer review by Kennedy Jenks. In October

2011 a revised draft was published and circulated for public review and comment. The final draft of the facilities plan was published in January 2012 and accepted by the District board on February 1, 2012. The full document can be located at the District web site by following this link.

<http://mckinleyvillecsd.com/document-library/20%20Year%20Facilities%20Plan>

INDEX OF ATTACHMENTS and EXHIBITS

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ATTACHMENT 2: Water Reclamation Study

ATTACHMENT 3: Ammonia Concentration Reduction Plan

EXHIBIT A: Tabular and Graphical Data

Influent and Effluent Monthly Totals

Influent and Effluent Maximum Day

EXHIBIT B: Tabular

CFS, River Dilution, Effluent Flow and Effluent Distribution

EXHIBIT C: Tabular and Graphical Data

Monthly Totals for Effluent Flow and Discharge Disposal Locations

Annual Effluent Distribution Pie Chart

Daily Totals for Effluent Flow and Discharge Disposal Locations

EXHIBIT D: Tabular Data

Monthly Monitoring Report (Permit exceedances highlighted in yellow)

EXHIBIT E: Tabular Data

Influent and Effluent Testing Monthly Averages

Daily Influent and Effluent Testing

EXHIBIT F: Tabular and Graphical Data

30-day Average BOD and NFR Worksheet

30 Day BOD and NFR Maximum, Minimum and Average Chart

BOD and NFR 30 Average Concentration Chart

BOD and NFR 30 Average lbs/day Chart

BOD and NFR 30 Day Average Removal Comparisons

BOD Influent, Effluent and Terminal Pond Comparisons

EXHIBIT G: Tabular and Graphical Data

Monthly Averages for pH, temperature Ionized and Unionized Ammonia

Relationship between Temperature and Ammonia Percent Removal Chart

Influent and Effluent Average Total Ammonia Chart

EXHIBIT H: Tabular Data

Discharge Data R-001, R-002 and M-001

Discharge Data R-003

Discharge Data R-004 and R-005
Well Monitoring Data

EXHIBIT I: Tabular Graphical Data

Pond Sludge Depths
Remaining Sludge Capacity Chart
Monthly/ Annual Averages for Pond Ammonia
Monthly/ Annual Averages for Pond Temperature
Monthly/ Annual Averages for Pond pH
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Monthly/ Annual Averages for Pond Level

EXHIBIT J: Tabular and Graphical Data

Monthly Total Aerator Hours
Monthly Total Aerator Hours versus Ammonia % Removal Chart
Monthly Total Aerator Hours versus Effluent BOD Chart
Monthly Total Aerator Hours versus BOD Percent Removal Chart

EXHIBIT K: Tabular Data

Monthly Total Electric, Cl₂, SO₂, and Rain Gage Data
TKN, Alkalinity, and Nitrate Special Testing

If you have any questions, please contact this office.

"I CERTIFY UNDER PENALTY OF LAW THAT THIS DOCUMENT AND ALL ATTACHMENTS WERE PREPARED UNDER MY DIRECTION OR SUPERVISION IN ACCORDANCE WITH A SYSTEM DESIGNED TO ASSURE THAT QUALIFIED PERSONNEL PROPERLY GATHER AND EVALUATE THE INFORMATION SUBMITTED. BASED ON MY INQUIRY OF THE PERSON OR PERSONS WHO MANAGE THE SYSTEM, OR THOSE PERSONS DIRECTLY RESPONSIBLE FOR GATHERING THE INFORMATION, THE INFORMATION SUBMITTED, IS, TO THE BEST OF MY KNOWLEDGE AND BELIEF, TRUE, ACCURATE, AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION, INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT FOR KNOWING VIOLATIONS."



NORMAN SHOPAY, DISTRICT GENERAL MANAGER



Reference: 008189.410

February 7, 2011

Ms. Lisa Bernard
California Regional Water Quality Control Board
North Coast Region
5550 Skylane Boulevard, Suite A
Santa Rosa, CA 95540

**Subject: Pilot Study for the Development of a Forest Reclamation System,
McKinleyville Community Services District, McKinleyville, California; WDR
Order No. R1-2008-0039; NPDES Permit No. CA0024490; WDID No.
1B82084OHUM**

Dear Ms. Bernard:

SHN Consulting Engineers & Geologists, Inc. (SHN) has prepared this forest reclamation system pilot study work plan on behalf of the McKinleyville Community Services District (MCSD). The intent of this work plan is to prepare a pilot study for the establishment of an effluent reclamation forest with groundwater monitoring. The pilot study will evaluate the efficiency of a hardwood forest for uptake of wastewater effluent produced at the MCSD Wastewater Management Facility (WWMF), located in McKinleyville, California (Figure 1).

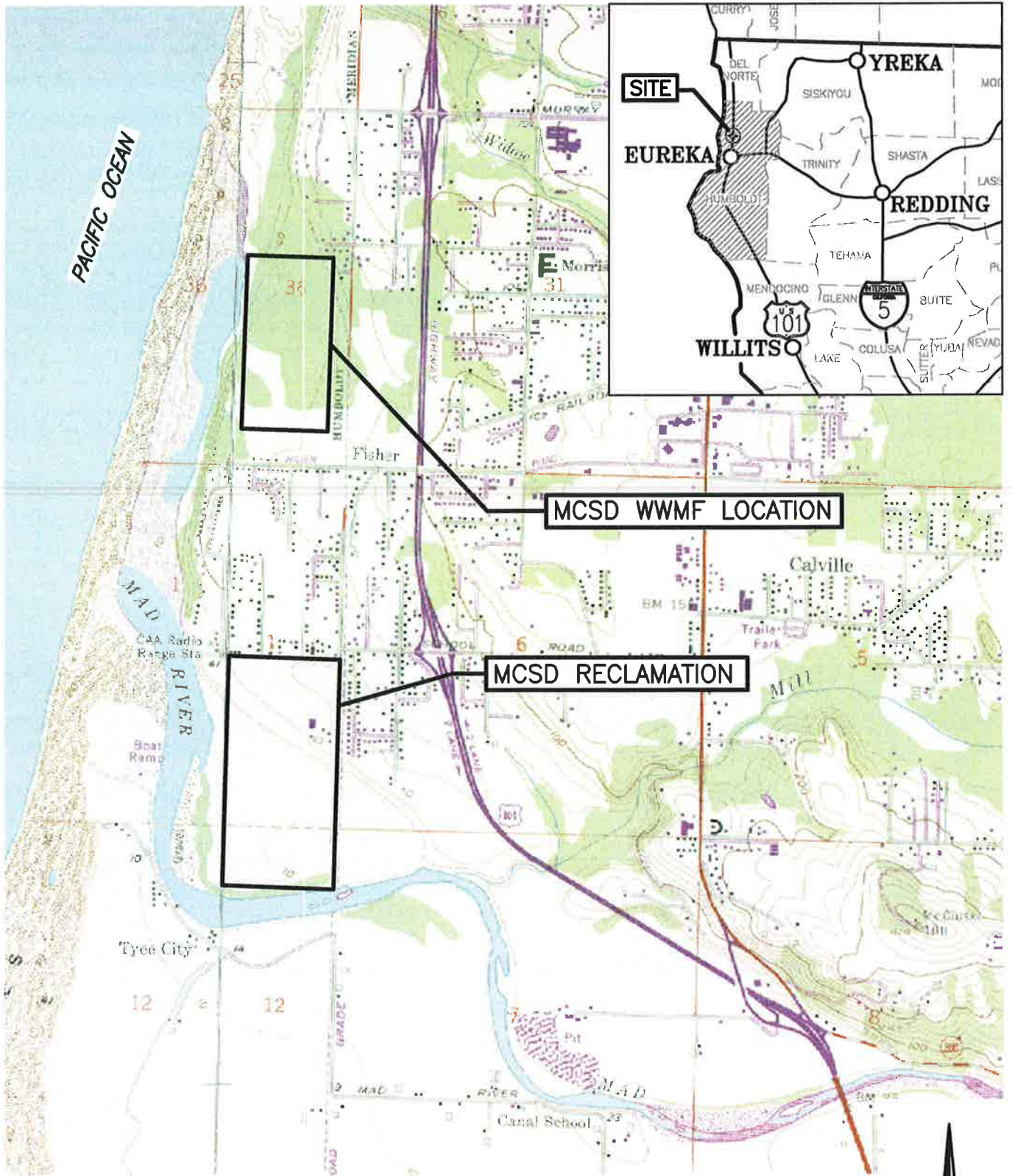
The California Regional Water Quality Control Board, North Coast Region (RWQCB), regulates the discharge of effluent from the WWMF under National Pollutant Discharge Elimination System (NPDES) Permit No. CA0024490 and Waste Discharge Requirement (WDR) Order No. R1-2008-0039 (Facility I.D. No. 1B82084OHUM). The proposed pilot study is listed in the schedule of tasks for alternatives for summer disposal, presented by SHN to the RWQCB on behalf of MCSD, on January 9, 2009.

Forest Reclamation System Pilot Study Work Plan

This forest reclamation system pilot study work plan is intended to provide the information necessary to develop a 1-acre forest that will receive wastewater effluent from the WWMF. The pilot forest will be located on the lower Fisher Ranch property that is currently used for wastewater effluent reclamation through an existing spray irrigation system. This plan contains a description of existing effluent water quality, a proposed irrigation system, the proposed tree species and planting plan (including planting density and timing), and a monitoring program proposed to evaluate the performance of the pilot forest.

Objectives

The purpose of the proposed pilot study is to plant and monitor a 1-acre poplar forest in lower Fisher Ranch to evaluate the effectiveness of the forest's assimilation capacity to uptake effluent during the application period.



SOURCE: ARCATA NORTH & TYEE CITY
USGS 7.5 MINUTE QUADRANGLE



Consulting Engineers
& Geologists, Inc.

McKinleyville Community Services District
Wastewater Management Facility
McKinleyville, CA

December 2009

Location Map

SHN 008189

008189-SITE-LCTN

Figure 1

Scope of Work

The following scope of work is designed to provide the information needed for the development of the pilot study project:

1. Define existing WWMF effluent water quality
2. Select a location for the pilot study
3. Select a tree species for the pilot study
4. Identify planting density
5. Establish baseline water quality
6. Identify irrigation system requirements
7. Determine an application rate
8. Locate existing and new monitoring well locations
9. Define the performance evaluation criteria
10. Prepare a work plan schedule

WWMF Effluent Characteristics

Table 1 summarizes the MCSD wastewater effluent characteristics measured in 2008.

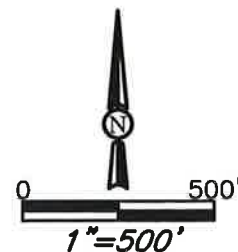
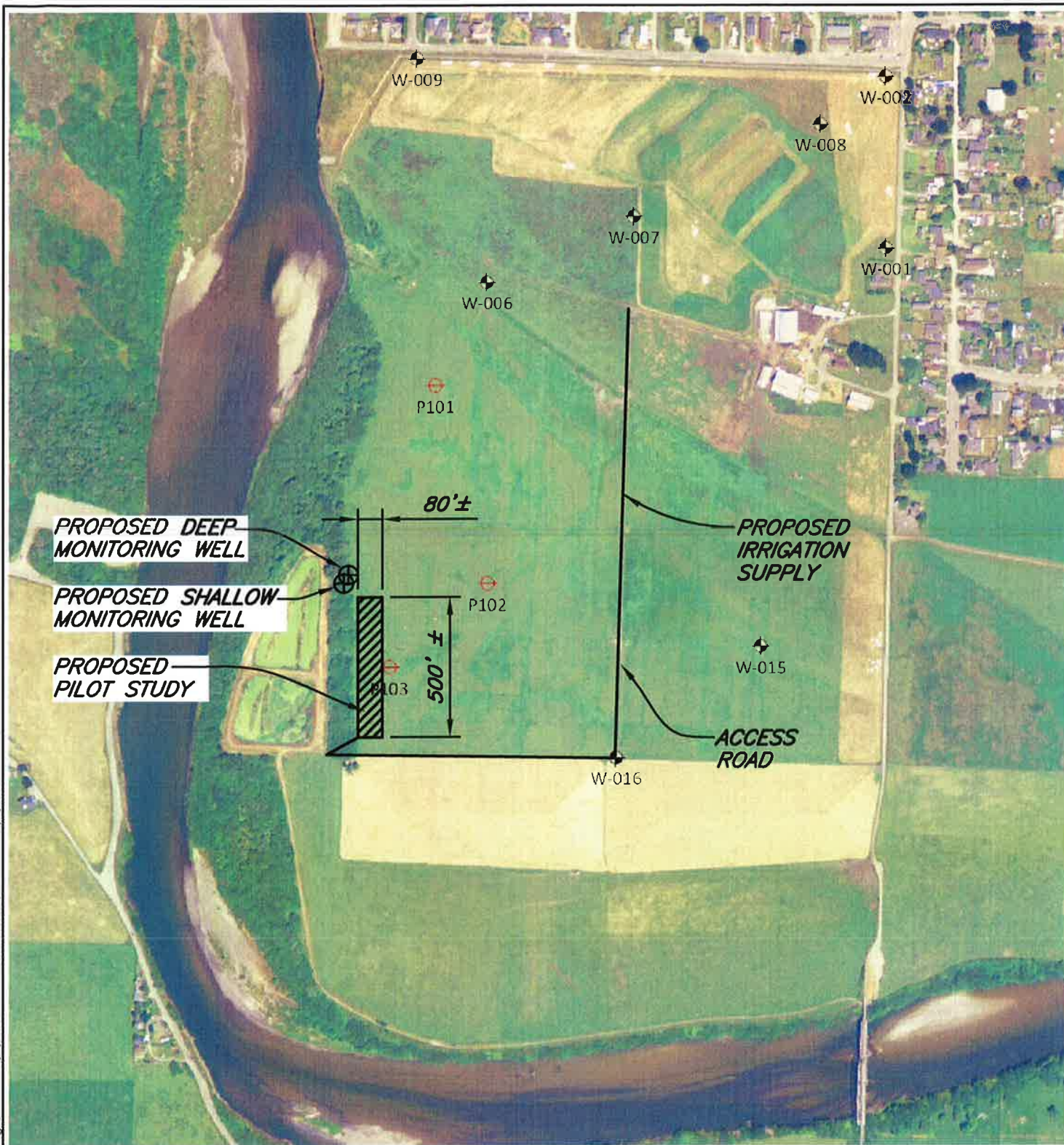
Table 1 2008 Wastewater Effluent Characteristics MCSD Wastewater Management Facility, McKinleyville, CA		
Parameter	Average	Maximum Monthly
Dry Weather Flow	0.898 MGD ¹	1.06 MGD
BOD ₅ ²	29.0 mg/L ³	34.8 mg/L
Ammonia as Nitrogen	22.3 mg/L	23.5 mg/L
<div><div>1. MGD: millions of gallons per day</div><div>2. BOD₅: Biochemical Oxygen Demand at five days</div><div>3. mg/L: milligrams per Liter</div></div>		

Proposed Location of Study Area

The proposed location of the study area is in the southwest corner of the lower Fisher Ranch reclamation area (Figure 2). The 1-acre site will use existing irrigation lines that currently distribute wastewater effluent to the percolation ponds. Access to the pilot forest will be from Fischer Avenue and the ranch roads that traverse the pastures. The pilot forest site is situated on the landscape to allow for expansion to the north and east.

Within the Mad River floodplain, where lower Fisher Ranch is located, site soils have been described as the Arlynda soil series. These fine-silty soils tend to stay saturated through the wet season, typically December through April; and groundwater levels typically drop to 5 or 6 feet below ground surface in mid-summer. A low permeability soil lens has been observed approximately 4 feet below ground surface (Winzler and Kelly, 1997). There is evidence that this soil lens may hydrologically separate the groundwater in communication with the Mad River from the irrigated soils of the floodplain.

\\Zing\projects\2008\008189-MCSD\400-DisposalStudy\Drawings, SAVED: 2/8/2011 9:57 AM NDOWNEY, PLOTTED: 2/8/2011 9:57 AM, NATHAN DOWNEY



Selected Species for Study

A variety of trees, including hybrid poplars (black cottonwood and eastern cottonwood, cross-fertilized) as well as trees native to the north coast of California, have been evaluated for consideration for the pilot study. Black cottonwood (*Populus trichocarpa*) has been selected based on its ability to uptake large quantities of water and its high nutrient assimilation capacity. Additional selection criteria included tree growth characteristics, viability, potential for beneficial use of harvested material, and local availability. Literature suggests that poplars have a high transpiration rate and can have an average nitrogen uptake of 270 pounds of per acre per year, for a whole tree harvesting cycle of 4 to 5 years (EPA 2006).

Black cottonwoods are found on alluvial floodplains, at elevations of 0 to 2,000 meters (0 to 6,500 feet). Extensive stands often form on river bottomlands at low elevations along the Pacific Coast. These stands are adapted to a variety of soils from moist silt, gravels, and sand to rich humus and occasional clays (USDA, 2009). Consistent with the permit requirements, black cottonwoods are not tolerant of stagnant pools. Black cottonwoods produce seed at 8 to 10 years, when seed is produced annually. Trees can be reproduced from stump sprouts and cuttings.

Planting Plan

The trees will be planted at 12-foot spacing, for a planting density of 300 trees per acre. MCSD has acquired 300 black cottonwoods from a local nursery for the pilot study. Trees will be spaced within 42, 80-foot rows; oriented east-west for irrigation.

Baseline Water Quality

Prior to the application of wastewater to the study area, the district will collect baseline water quality information (Total Dissolved Solids [TDS] and nitrate as nitrogen) from existing and new monitoring wells. Soil samples will be taken to determine the baseline nitrate concentrations.

Irrigation System

Effluent from the WWMF will be conveyed to the pilot forest using the existing 6-inch effluent piping located adjacent to the existing percolation ponds, west of the proposed study area. A new distribution pipe will branch east to pasture at the southwest corner of the proposed planting area. A distribution header will be connected at this point and extend approximately 500 feet north along the western edge of the proposed planting area. Four (4)-inch lateral piping will be placed every 12 feet along the distribution header to convey effluent into the planted area. Each lateral will be approximately 80 feet in length with large diameter orifices placed at 12-foot centers to provide flow at the base of each tree. Large diameter orifices are to be used in order to prevent plugging and reduce maintenance requirements.

A flow meter will be placed in the distribution header to ensure accurate monitoring of flow diverted to the study area.

Application Rate

Poplar trees have a high potential hydraulic loading; however, the wastewater nitrogen concentration compared to the agronomic nutrient uptake rate of the trees will be the controlling factor to determine the acceptable application rate. Average annual nitrogen uptake for hybrid poplar trees is reported to be 270 pounds per acre (USEPA, 2006). MCSD wastewater effluent currently contains an average ammonia concentration of 22 milligrams per Liter (mg/L), which is the primary species of nitrogen. Assuming a 180-day application season (May 1st through November 1st), the application of wastewater will be limited to an average of 1.5 pounds of plant available nitrogen per day. Based on these assumptions, average irrigation rates to the pilot study area are estimated to be 8,200 gallons of effluent per day. It is assumed that flows will be distributed across the growing season and field observations will dictate limits to the application rate.

MCSD is actively seeking treatment process improvements to reduce high effluent ammonia levels. Effluent nitrogen concentrations are monitored each weekday; therefore, the irrigation application rate can be adjusted to effluent nitrogen concentrations, as needed.

Groundwater Monitoring

Groundwater monitoring wells W-015 and W-016 are located within lower Fisher Ranch, near the proposed study area. These wells are monitored quarterly for nitrates and TDS and weekly for groundwater depth; however, due to their distance from the proposed study site, additional wells will need to be installed for data collection during the study period. In 2009, SHN installed three piezometers within the western portion of lower Fisher Ranch. These wells have since been monitored for groundwater levels by MCSD. Piezometers P102 and P103 are located approximately 375 to the northeast and 25 feet to the east, respectively, of the proposed pilot study area. These piezometers can be used to monitor upgradient (background) groundwater levels and quality associated with the irrigation soil. Two new monitoring wells will be constructed downgradient (northwest) of the study area to provide groundwater levels and quality data. These new wells will be installed to interface with the two substrate layers that are assumed to be hydrologically disconnected; one shallow (approximately 10 feet deep) and the second deep (approximately 15 to 20 feet deep). Figure 2 shows the proposed locations of the monitoring wells. These wells will be added to MCSD's groundwater depth and quarterly groundwater quality monitoring for the study period.

Performance Evaluation Criteria

The intent of the pilot study is to evaluate the reclamation rate of application for black cottonwoods related to evapotranspiration and nutrient uptake. It is anticipated that the proposed hardwood forest will increase its assimilation capacity within the first 5 years of establishment. MCSD currently provides quarterly groundwater quality monitoring and reporting for its existing monitoring wells. In addition, MCSD keeps records of the distribution flow rates to each reclamation area. Effluent flow rates to the pilot study reclamation area will need to be recorded separately from operations elsewhere within lower Fisher Ranch. The following bulleted list of parameters is proposed to evaluate the pilot study forest's ability to transpire and uptake nutrients, as well as monitor impacts to groundwater in communication with the Mad River.

- Measure effluent flow rate to pilot study site.
- Expand measurements of depth to groundwater to include two new monitoring wells, down-gradient of pilot study site.

- Expand measurements of groundwater quality to determine uptake of nutrients (nitrate as nitrogen) and available salts (TDS).

Tree vitality and composition will be visually inspected monthly by MCSD staff. Any changes to the trees (rot, predation, etc.) will be reported to the MCSD Operations Manager. All findings will be summarized in a brief report and submitted to the RWQCB as part of MCSD's annual report.

Work Plan and Schedule

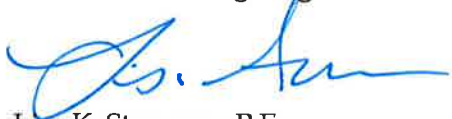
Table 2 provides the proposed schedule for implementation of the pilot study tasks.

Table 2 Schedule of Tasks Development of Forest Reclamation System MCSD Wastewater Management Facility, McKinleyville, CA		
Task No.	Task Description	Approximate Date
1	Plant trees to be used in the pilot study	February - March 2011
2	Install monitoring wells and collect baseline groundwater quality	March - April 2011
3	Install irrigation system	March - April 2011
4	Begin applying effluent to study area	May 2011
5	Summarize findings in a brief report and provide additional recommendations as needed.	Fall 2011

SHN believes the proposed multi-year approach as outlined in this plan will help address the effectiveness of the study plot for effluent reclamation. We look forward to your review of this proposed forest reclamation system pilot study work plan. If you have any questions or comments, please call me or Rose Patenaude at 707-441-8855.

Sincerely,

SHN Consulting Engineers & Geologists, Inc.



Lisa K. Stromme, P.E.
Water Resources Engineer/
Planning & Permitting Dept Head

LKS/JRP:lms

c.: Norman Shopay, MCSD
Greg Orsini, MCSD

References

- United States Department of Agriculture, Natural Resources Conservation Service. (Accessed: October 16, 2009). "USDA-NRCS Plants Database. Black Cottonwood Plant Guide." Available: http://plants.usda.gov/plantguide/pdf/cs_pobat.pdf. Washington, D.C.: NRCS
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- Winzler & Kelly, Consulting Engineers. (1997). *McKinleyville Community Services District Irrigation Pilot Study Final Report*. Eureka: W&K.

Water Reclamation Study

**MCSD Wastewater Management Facility
WDR Order No. R1-2008-0039**

Prepared for:

McKinleyville Community Services District



Consulting Engineers & Geologists, Inc.

**812 W. Wabash Ave.
Eureka, CA 95501-2138
707-441-8855**

**February 2011
008189.210**



Reference: 008189.210

February 1, 2011

Ms. Lisa Bernard
California Regional Water Quality Control Board
North Coast Region
5550 Skylane Boulevard, Suite A
Santa Rosa, CA 95540

**Subject: Water Reclamation Study, McKinleyville Community Services District,
McKinleyville, California; WDR Order No. R1-2008-0039**

Dear Ms. Bernard:

SHN Consulting Engineers & Geologists, Inc. (SHN) has prepared this water reclamation study (WRS) on behalf of the McKinleyville Community Services District (MCSD). The intent of this WRS is to address the evaluation of the water reclamation system at the MCSD Wastewater Management Facility (WWMF), located in McKinleyville, California. This report is intended to fulfill the Special Studies requirement for a WRS as outlined in Waste Discharge Requirements (WDR) Order No. R1-2008-0039, Section VI. C. *Special Provisions*, Item 2.d.ii. The conclusions of the WRS demonstrate that wastewater reuse on the existing wastewater reclamation areas does not conform to the current WDRs for reclamation activities. In accordance with current permit requirements, based on these conclusions, MCSD is required to either:

- a. Submit a written proposal to either study alternatives to comply with reclamation/recycling requirements, or
- b. Submit a revised report of waste discharge and apply for a permit to conduct land disposal.

To comply with this requirement, MCSD will be submitting a written proposal to study alternatives to comply with reclamation requirements by August 1, 2011. If you have any questions or comments on the enclosed report, please call me or Lisa Stromme at 707-441-8855.

Sincerely,

SHN Consulting Engineers & Geologists, Inc.

J. Rose Patenaude, P.E.
Project Engineer

JRP/LKS:lms

Enclosures: Water Reclamation Study
c. w/encl: Norman Shopay, MCSD
Greg Orsini, MCSD

Water Reclamation Study

MCSD Wastewater Management Facility

WDR Order No. R1-2008-0039

Prepared for:

McKinleyville Community Services District
McKinleyville, California

Prepared by:



Consulting Engineers & Geologists, Inc.
812 W. Wabash Avenue
Eureka, CA 95501-2138
707-441-8855

February 2011

QA/QC:MKF 



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Acronyms and Abbreviations

<	“less than” the stated method reporting limit
acre-yr	acre-year
ft	feet or foot
ft/day	feet per day
ft ² /day	square feet per day
in/day	inches per day
mg/L	milligrams per Liter
MGD	million gallons per day
MPN/100 ml	most probable number per 100 milliliters
AWHC	Available Water Holding Capacity
BGC	Busch Geotechnical Consultants
BGS	Below Ground Surface
BOD	Biochemical Oxygen Demand
CIMIS	California Irrigation Management Information System
ET	Evapotranspiration
GPS	Global Positioning System
K	Potassium
MAD	Management Allowable Depletion
MCL	Maximum Contaminant Level
MCSD	McKinleyville Community Services District
MW-#	Monitoring Well-number
N	Nitrogen
ND	Not Detected
NFR	Non-Filterable Residue
NPDES	National Pollutant Discharge Elimination System
RWQCB	California Regional Water Quality Control Board, North Coast Region
SAR	Sodium Absorption Ratio
SHN	SHN Consulting Engineers & Geologists, Inc.
TDS	Total Dissolved Solids
TSS	Total Suspended Solids
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
W-#	Well-number
W&K	Winzler & Kelly
WDR	Waste Discharge Requirements
WRS	Water Reclamation Study
WWMF	Wastewater Management Facility

1.0 Introduction

SHN Consulting Engineers & Geologists, Inc. (SHN) has prepared this water reclamation study (WRS) on behalf of the McKinleyville Community Services District (MCSD). The intent of this WRS is to address the evaluation of the water reclamation system at the MCSD Wastewater Management Facility (WWMF), located in McKinleyville, California (Figure 1).

The California Regional Water Quality Control Board, North Coast Region (RWQCB), regulates the discharge of effluent from the MCSD WWMF under National Pollutant Discharge Elimination System (NPDES) Permit No. CA0024490 and Waste Discharge Requirements (WDR) Order No. R1-2008-0039 (Facility I.D. No. 1B82084OHUM). This report is intended to fulfill the Special Studies requirement for a WRS as outlined in the WDR, Section VI. C. *Special Provisions*, Item 2.d.ii. This provision requires submittal of a reclamation study to determine the appropriate salt, nutrient, and irrigation management practices for the existing water reclamation system. In accordance with the WDR requirements, this report is being submitted for Executive Officer review and approval.

The objective of this WRS is to evaluate whether the discharge of treated wastewater through MCSD's land irrigation system is in compliance with the WDR. This study includes, but is not limited to the following investigations of MCSD's land irrigation system:

- site-specific lithology and soil transmissivity;
- depth to groundwater across seasonal variations;
- quality of recycled water for comparison to Department of Health Services Maximum Contaminant Levels;
- vegetative or crop nutrient demand; and
- acreage required to prevent irrigation beyond the amount needed for vegetation or crops, accounting for evapotranspirative demand, the distribution uniformity of irrigation system, and leaching needed to prevent the buildup of salts in soil.

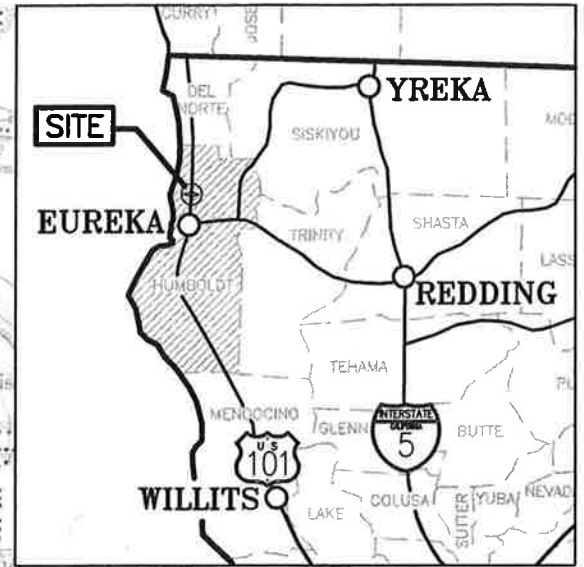
2.0 Facility Background and Description

2.1 Wastewater Management Facility

The WWMF is a secondary treatment process that consists of three aerated ponds and one stabilization pond followed by a two-stage treatment wetland marsh. The treatment facility is designed to treat up to 3.3 million gallons per day (MGD) and serves approximately two-thirds of the estimated 14,000 residents in the unincorporated community of McKinleyville.

Community wastewater is collected at five lift stations for pumping to a combined headworks comminuter at the wastewater treatment plant. Flow from the headworks enters two parallel facultative primary aeration ponds. The primary aeration ponds overflow to a second aeration pond and then a stabilization pond, which is followed by two emergent bulrush marshes that are used for further treatment. A chlorine contact chamber is used for disinfection and the effluent is dechlorinated, as necessary, prior to discharge to the Mad River.

PACIFIC OCEAN



MCSD WWMF LOCATION

MCSD RECLAMATION

**SOURCE: ARCATA NORTH & TYEE CITY
USGS 7.5 MINUTE QUADRANGLE**



Consulting Engineers
& Geologists, Inc.

McKinleyville Community Services District
Wastewater Management Facility
McKinleyville, CA

December 2009

Location Map

SHN 008189

008189-SITE-LCTN

Figure 1

During the discharge period, from October 1 through May 14, treated wastewater effluent is discharged to the Mad River (Discharge Point 001), or, if the flow in the river is less than 200 cubic feet per second, effluent is discharged to the percolation ponds adjacent to the river (Discharge Point 002) and/or to land for reclamation (use as irrigation water). During the discharge prohibition period, from May 15 through September 30, effluent is discharged to the percolation ponds (Discharge Point 002) and/or to land for reclamation. Discharge to land occurs at the Lower Fisher Ranch (Discharge Point 003), Upper Fisher Ranch (Discharge Point 004), the Hiller Parcel (Discharge Point 005), and the Pialorsi Ranch (Discharge Point 006). Discharge locations are shown on Figure 2.

2.2 Wastewater Reclamation Areas

MCSD reclaims wastewater effluent at the Fisher and Pialorsi Ranches, south of School Road and West of Fisher Road in McKinleyville. Wastewater effluent is also reclaimed for irrigation of stormwater wetlands and a forested area at Hiller Park in McKinleyville during the dry months of the year. For the purpose of this report, MCSD wastewater effluent reclamation areas are limited to the Fisher Ranch and Pialorsi Ranch irrigation areas. Reference to the “Upper and Lower” Fisher Ranch is used to differentiate the upper terrace, where both flood irrigation and spray irrigation operations occur, from the lower floodplain at the toe of the hillslope, where spray irrigation is applied. The Upper Fisher Ranch consists of approximately 33 acres, 28 of which are used for reclamation. Wastewater effluent is applied to approximately 19 acres through flood irrigation and to 9 acres by spray irrigation. The Lower Fisher Ranch consists of approximately 45 acres and the Pialorsi Ranch has approximately 35 acres available for irrigation.

Based on data collected from 2008 and 2009, the Upper Fisher Ranch received approximately 25-29% of the annual effluent discharge, whereas the Lower Fisher and Pialorsi Ranches received 2% and 5-7% of the annual discharge, respectively.

3.0 Site Specific Lithology and Soil Properties

3.1 Existing Studies

Studies were performed concurrently by Winzler and Kelly (W&K) and Busch Geotechnical Consultants (BGC) to evaluate flood irrigation methods on the Fisher Ranch (previously, the Lourenco site), beginning in 1995. BGC performed a series of subsurface investigations and groundwater studies on the Upper Fisher Ranch, including the installation of nine monitoring wells (W-001 through W-009) in 1995 and 1996 (BGC, 1996a; BGC 1996b; BGC 1996c; BGC 1997a; BGC 1997b; BGC 1998; BGC 1999a; and BGC, 1999b). The objectives of the geological reports and groundwater studies were to describe the water bearing strata lithography, summer low-flow and winter high-flow groundwater gradients, hydrologic characteristics of the underlying aquifer, the potential for mounding as a result of effluent application, the potential for the adjacent river bluffs to saturate and erode or fail, and the potential for the treated effluent to emerge from the hillslope.

W&K performed a pilot study in 1997 to test various irrigation methods to manage both slow and rapid infiltration for wastewater effluent reclamation (W&K, 1997). Included in the W&K study was an evaluation of the Upper and Lower Fisher Ranch soils to determine the effects of reclaimed effluent on soil fertility and hydraulic conductivity calculations.



3.2 Site-Specific Lithology

The Upper Fisher Ranch is located on a terrace, south of School Road and west of Fisher Avenue in McKinleyville. During the winter of 1995-1996, BGC explored the subsurface of the Upper Fisher Ranch by drilling eight deep boreholes, ranging in depth from 40 to 51.5 feet, and hand-augering a shallow hole to a depth of 7.25 feet. The subsurface investigation demonstrated that all sediments were fluvial and near-shore marine deposits. Generally, the explored portion of the subsurface was described to be coarsening upward in three sediment units below the soils and subsoils. The deepest sediments (below 35 feet) primarily consist of fine-grained sediments (fine sands, silts and clays), which have relatively low permeability. The upper units are both water bearing. The middle unit is approximately 10 feet thick, is not continuous throughout the site, and is composed primarily of gravels and sands. The uppermost unit is composed primarily of silty gravels; however, the silt component decreases with depth (BGC, 1996a).

The Lower Fisher Ranch and the Pialorsi Ranch are located directly south of the Upper Fisher Ranch and west of Fisher Avenue in McKinleyville. The Lower Fisher Ranch and the Pialorsi Ranch are located within a low floodplain step on the alluvial plain of the Mad River, bound to the north by a high terrace, rising up from the Mad River Fault. A natural berm has formed along the outboard edge of the floodplain step impeding inundation, except for during extreme flood events.

3.3 Site Soils

Site soils within the Upper Fisher Ranch consist of the Arcata soil series, which are coarse-loamy, mixed, superactive, mesic Pachic Humudepts (NRCS, 2010). Arcata soils are defined by very deep well drained soils formed in weakly consolidated marine sediments. Arcata soils typically are featured on marine terraces that range from flat to 10 percent slopes.

Within the river floodplain, where the Lower Fisher Ranch and the Pialorsi Ranch are located, site soils were originally described as Ferndale soils (McLaughlin and Harradine, 1965), and then redefined as Weott (W&K, 1997), and Arlynda soil series (S. Aszman pers. comm., 2010). The outer vegetated edge of the floodplain is further differentiated as the Mad River soil series (S. Aszman, pers. comm., 2010).

Weott and Arlynda soil series are geographically associated soils that are taxonomically classified as fine-silty, mixed, superactive, nonacid, isomesic Fluvaquentic Endoaquepts (NRCS, 2010). These series consist of deep, poorly drained soils that typically are featured in alluvial floodplains, meander scars, backswamps, depressions, and floodplain steps with gradients of zero to 2 percent.

3.4 Soil Transmissivity

Hydraulic conductivity was estimated by W&K in 1991 and 1996 using falling head permeability testing (W&K, 1997). Four test pits were sampled from both the Upper and the Lower Fisher Ranch in June of 1991 at three soil horizons. In January of 1996, soils were collected from six test pits within the terrace and the slope of the Upper Fisher Ranch. The latter set of tests was collected within what was perceived to be the most restrictive (least permeable) of the soil horizons at each pit, based on the data collected in 1991. Table 1 summarizes the results from this study.

Table 1 Soil Properties at the Upper and Lower Fisher Ranch ^{1,2} MCSD Water Reclamation Study, McKinleyville, CA					
Location	Date of Collection	Test Pit Identifier	Sample No.	Depth (in)	Hydraulic Conductivity (in/min)
Upper Fisher Ranch	6/1991	T1	1	4	1.13E-01
			2	20	3.85E-02 ³
			3	48	6.48E-02
		T2	1	3	3.45E-03 ³
			2	16	2.86E-02
			3	53	2.51E-02
	1/1996	P2	1	55	1.99E-02
		P3	1	34	7.39E-02
		P4	1	43	8.31E-02
		P5	1	44	4.21E-02
		P6	1	20	6.22E-02
Lower Fisher Ranch	6/1991	T3	1	1	7.26E-04
			2	18	3.40E-01
			3	52	3.49E-05 ³
	T4	1	1	5.34E-03	
		2	19	2.46E-01	
		3	50	1.75E-05 ³	
1. Results from permeability testing performed in June 1991 and January 1996 (W&K, 1997). 2. All samples were tested with a 6-inch head; therefore, all surface samples have an infiltration rate slower than that of the permeability shown here. 3. Most restrictive horizon.					

Based on the soil hydrogeologic properties of the Upper Fisher Ranch as characterized by W&K in 1996, and assuming that the measurement depths were representative of soil layer thickness, soil transmissivities were calculated for each test pit. The average soil transmissivity of the Upper Fisher Ranch from samples that were collected within the most restrictive soil layer (Test Pits P2 through P6) is approximately 20.6 square feet per day (ft²/day).

The soil horizon data reported for the Lower Fisher Ranch in 1991 indicate that the system soils perch infiltrated water above a relatively impermeable layer at a depth of approximately 4 feet. Above this layer, the average soil transmissivity below the first inch of resistive surface is approximately 0.03 ft²/day. Horizon-specific soil transmissivity data from test pits sampled within the Upper and Lower Fisher Ranch are summarized in Table 2.

Table 2 Soil Transmissivity of the Upper and Lower Fisher Ranch ^{1,2} MCSD Water Reclamation Study, McKinleyville, CA					
Location	Test Pit Identifier	Sample No.	Horizon Depth (ft)	Hydraulic Conductivity (ft/day)	Soil Transmissivity (ft ² /day)
Upper Fisher Ranch	P2	1	4.58	2.39	10.9
	P3	1	2.83	8.87	25.1
	P4	1	3.58	9.97	35.7
	P5	1	3.67	5.05	18.5
	P6	1	1.67	7.46	12.4
Lower Fisher Ranch	T3	1	0.08	0.09	0.01
		2	1.42	40.80	57.80
		3	2.83	0.004	0.01
	T4	1	0.08	0.64	0.05
		2	1.50	29.52	44.28
		3	2.58	0.002	0.01
1. Results from permeability testing performed in June 1991 and January 1996 (W&K, 1997). 2. All samples were tested with a 6-inch head; therefore, all surface samples have an infiltration rate slower than that of the permeability shown here.					

3.5 Soil Salinity Analysis

Because of the quantity of information available from previous studies, a limited number of additional soil samples were collected for this study. These samples were collected only in areas where there was insufficient existing soil information, notably in the Lower Fisher Ranch area. Sampling transects were established to capture variations in soils, crop management, and/or irrigation application.

Transect locations were randomly generated and each transect included up to four sample locations, at approximately 50 foot (ft) distance intervals. Sampling locations were recorded with a portable Global Positioning System (GPS) unit and are shown on Figure 3. At each sample location, in situ surface and subsurface soil samples were obtained and the sampling depth was recorded. Samples were taken at root depth (0-0.7 feet) and at a 1-1.5-foot depth. These samples were characterized for physical and chemical properties, as required, to evaluate the area. The laboratory results for the samples collected are presented in Appendix A.

The results of the additional soil sampling indicated that site soils in the Lower Fisher Ranch are not limited by excess sodium. The relationship between sodium, calcium and manganese is expressed as a Sodium Absorption Ratio (SAR). In general, a SAR value greater than 13 indicates soils may have reduced hydraulic conductivity and aeration (NRCS, 2010). The SAR values in soil collected from the site ranged from 2.3 to 6.4.



4.0 Groundwater Monitoring

4.1 Well Installation

Groundwater monitoring wells were installed within and adjacent to the Upper Fisher Ranch by BGC in 1995 and 1996 to establish summer low-flow and winter high-flow groundwater gradients, define the hydrologic characteristics of the underlying aquifer, and evaluate the potential for mounding as a result of effluent application (BGC, 1996a). BGC monitored and reported groundwater level data until 1997, at which time MCSD took over and has continued these tasks. MCSD measures groundwater depths in all monitoring wells weekly and reports to the RWQCB a subset of this data quarterly.

SHN installed three additional groundwater monitoring stations with 2-inch piezometers that MCSD has added to their weekly groundwater monitoring. Figure 3 displays the locations of the groundwater monitoring wells and piezometers that are currently measured weekly to establish seasonal and operational changes to groundwater elevations.

4.2 Depth to Groundwater

Seasonal variations in groundwater depth from the Upper and Lower Fisher Ranches are illustrated in Figure 4. Monitoring wells M-007 and M-016 are representative of the typical groundwater fluctuations throughout the year. Based on measurements collected in 2010, the depth to groundwater from the Upper Fisher Ranch is greater than 20 feet during the dry season, rising to nearly 10 feet during the wet months. Groundwater gradients naturally slope southwestward.

Groundwater depth in the Lower Fisher Ranch ranges from approximately 6 to 8 feet Below Ground Surface (BGS) in the dry season. In the winter, the northwestern portion of the parcel floods and groundwater surfaces; measurements at monitoring wells W-016 and W-019, in the center of the parcels, are reported to maintain an average of approximately 4 feet BGS to groundwater. Subsurface investigations define a semi-impervious soil layer that ranges from 4 to 6 feet BGS, which may provide soil confinement from groundwater connected hydraulically to the Mad River.

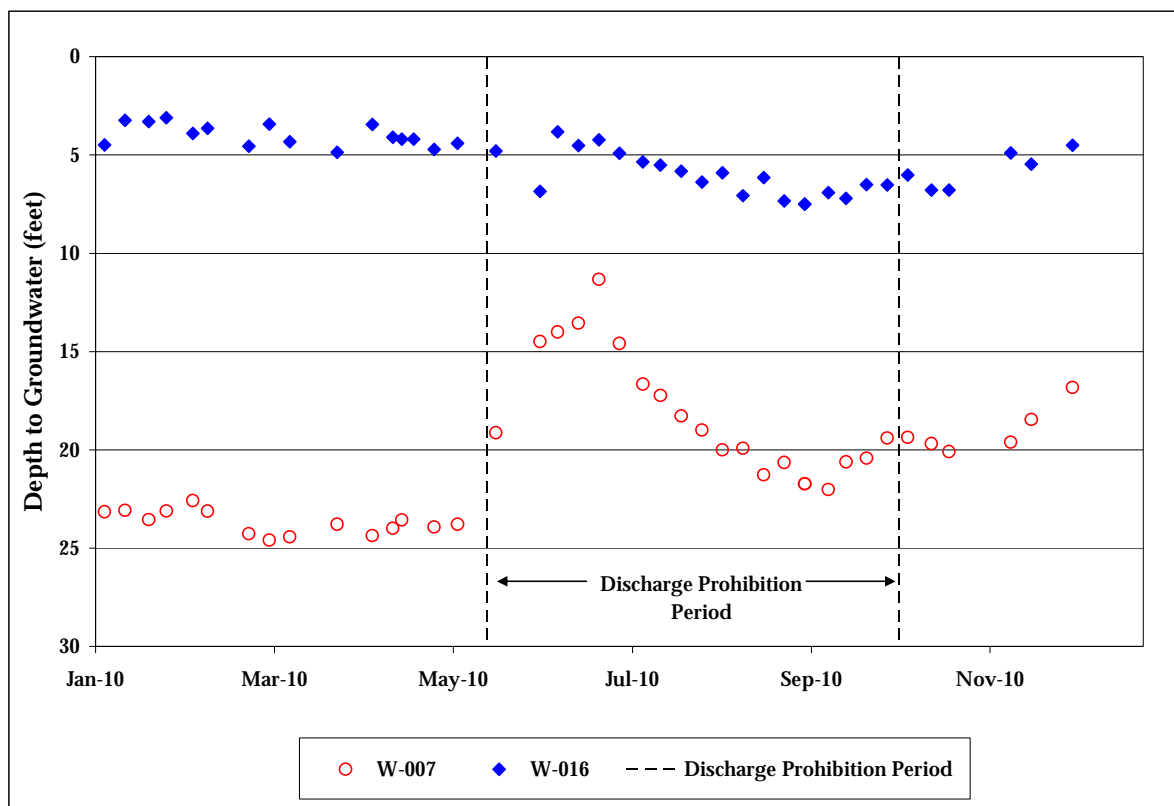


Figure 4. Seasonal Groundwater Fluctuations at Monitoring Wells W-007 and W-016

5.0 Wastewater Effluent Quality

Effluent discharged for land reclamation is sampled weekly and analyzed for conformance with permit effluent limitations for reclamation, including Biochemical Oxygen Demand (BOD), Total Suspended Solids (TSS), also referred to as Non-Filterable Residue (NFR), and total coliform organisms. Ammonia is sampled every workday (weekday). MCSD started sampling additional constituents, including nitrate as nitrogen and Total Dissolved Solids (TDS) in August 2008.

Seasonal variation in wastewater effluent quality from data collected in 2009 is summarized in Table 3. Table 3 also includes a comparison of average values with the corresponding permit limitations and maximum contaminant levels mandated by the U.S. Environmental Protection Agency (USEPA) and California for drinking water standards. All values are within the limits for effluent discharge.

Groundwater monitoring wells are sampled quarterly for TDS and nitrates. Through the process of nitrification, effluent ammonia is converted into nitrite and then nitrate in the vadose zone. Figures 5 and 6 illustrate nitrate and TDS concentrations in groundwater monitoring wells W-007 and W-016, which were chosen to represent the Upper and Lower Fisher Ranches, respectively.

As shown in Figures 5 and 6, wastewater effluent appears to be in communication with the groundwater beneath the Upper Fisher Ranch because nitrate and TDS concentrations track seasonal effluent concentrations.

Table 3
Wastewater Effluent Quality¹
MCSD Water Reclamation Study, McKinleyville, CA

Month	Average Monthly BOD ² (mg/L) ³	Average Monthly TSS ⁴ (mg/L)	Average Monthly Total Coliform (MPN/100 ml) ⁵	Average Monthly Ammonia as N ⁶ (mg/L)	Monthly Nitrate as N (mg/L)	Monthly TDS ⁷ (mg/L)
January	40	36	<2 ⁸	27.5	ND ⁹	280
February	42	51	<2	27.2	ND	300
March	41	50	<2	26.2	ND	250
April	28	36	<2	25.6	ND	240
May	29	36	<2	25.8	ND	270
June	37	34	<2	23.2	ND	320
July	34	23	<2	22.7	ND	370
August	35	8	<2	21.7	ND	340
September	31	7	<2	26.1	ND	360
October	32	30	<2	25.6	ND	340
November	39	44	<2	24.7	ND	330
December	28	35	<2	25.0	ND	260
Permit Limit Avg. Monthly	45	83	23/230 ⁸	--	--	--
USEPA MCL ¹⁰	--	--	--	--	10	500 ⁹
California MCL	--	--	--	--	45	500 to 1,500 ⁹

1. MCSD 2009 wastewater effluent data
2. BOD: Biochemical Oxygen Demand
3. mg/L: milligrams per Liter
4. TSS: Total Suspended Solids
5. MPN/100 ml: Most Probable Number per 100 milliliters
6. N: Nitrogen
7. TDS: Total Dissolved Solids
8. <: "Less Than" the stated method reporting limit
9. ND: Not Detected
10. MCL: Maximum Contaminant Level

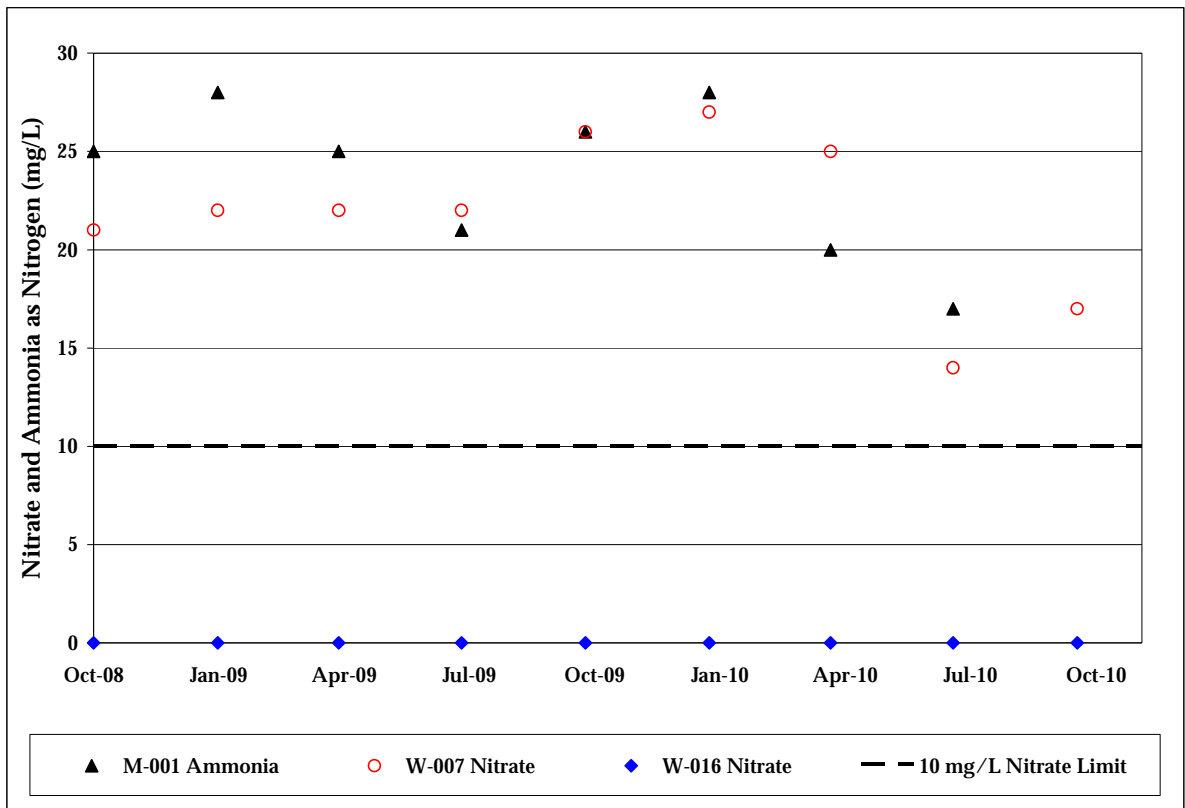


Figure 5. MCSD Reclamation Groundwater Quality: Nitrates

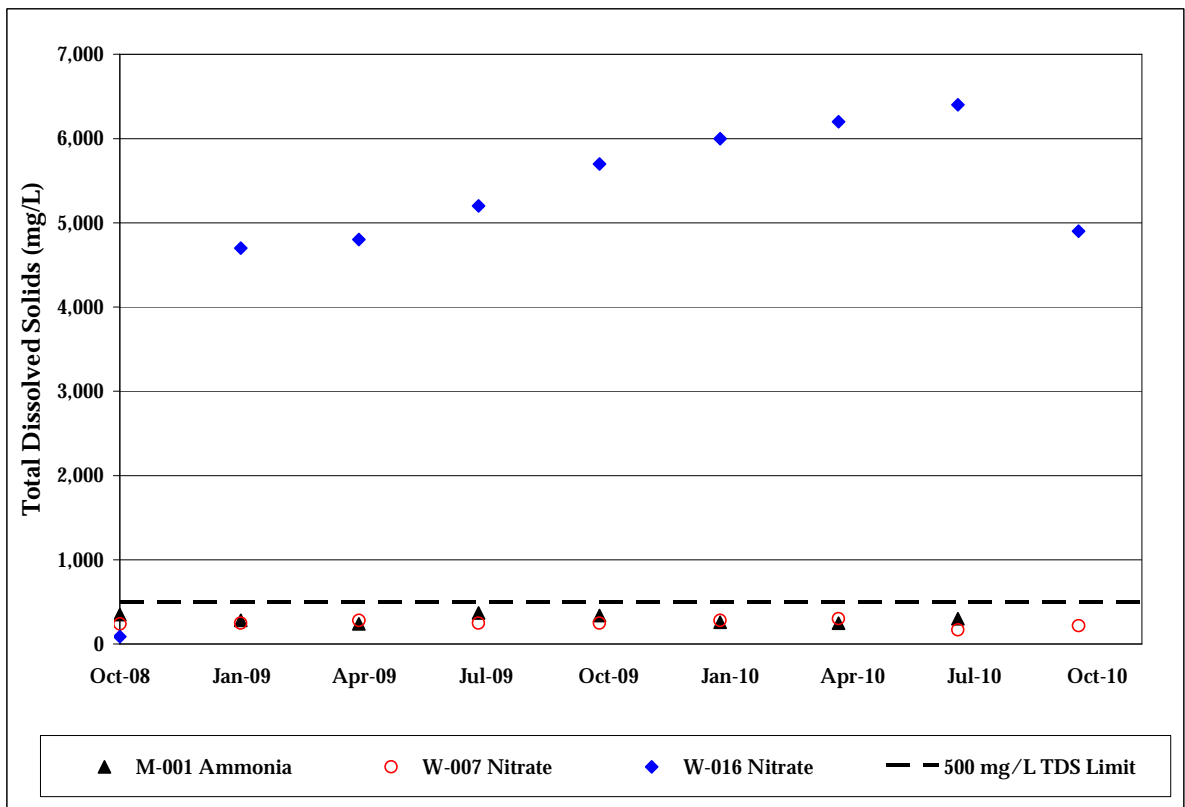


Figure 6. MCSD Reclamation Groundwater Quality: Total Dissolved Solids

5.1 Nitrate

Nitrate concentrations in the Upper Fisher Ranch groundwater monitoring wells exceeded the 10 milligrams per Liter (mg/L) limitations for all samples, averaging 22 mg/L at W-007. These results correspond to similar effluent ammonia concentrations during the same period. Concentration of nitrates in the Lower Fisher Ranch exceeded drinking water limitations at 19 mg/L at W-016 in January of 2009; however, nitrate levels were below the 10 mg/L limit for all other measurements and were typically at non-detect levels.

5.2 Total Dissolved Solids

TDS concentrations in the groundwater beneath the Lower Fisher Ranch exceeded limitations and were considerably greater than effluent concentrations, indicating that the lower pasture monitoring wells are likely hydraulically connected to groundwater beneath the semi-impervious soil layer observed in subsurface investigations. BGC also noted this connection, reporting to MCSD that monitoring well MW-16 [W-015] is “tidally influenced” (BGC, 1996c).

To confirm that the TDS concentrations observed in the monitoring wells in the lower pasture are influenced by groundwater connected to the Mad River, and are not indicative of the TDS concentrations in the perched groundwater zone, TDS samples should be measured in the shallow piezometers, which did not penetrate below the overlying soils when installed.

Review of historical effluent data has indicated that concentrations of iron, manganese, and sodium were relatively low (W&K, 1997). Based on low TDS concentrations currently detected in the wastewater effluent, it has been assumed that concentrations of iron, manganese, and sodium are still correspondingly low. To confirm this assumption, these parameters will be tested during the 2011 discharge season.

6.0 Nutrient Demand and Tolerances

6.1 Vegetative or Crop Nutrient Demands and Tolerances

Crop nutrient uptake, water use, and management are all key factors in the efficiency of wastewater reclamation practices. Nutrient uptake is dependent upon the crop type, soils, and irrigation management and may be defined by a nutrient budget based on crop management. Water use and tolerance are defined by the crop transpiration rates and the system’s water balance. Crop planting, harvesting, and pest control depend on appropriate management of a specific crop type.

MCSD currently maintains a grass mix crop cover on the reclamation sites to harvest hay and silage. Based on the climate of McKinleyville, appropriate species are those that are considered cool season grasses (ryegrass, orchardgrass and tall fescue) and cool season legumes (ladino clover, strawberry clover, and trefoil). None of these species are native to California; however, they are common crop covers for hay production.

6.2 Crop Nutrient Demand

Yield based macronutrient uptake of typical grass and legume species used for hay production in cooler climates are summarized in Table 4.

<p align="center">Table 4 Yield Based Nitrogen, Phosphorous, and Potassium Uptake of Typical Hay Grass Species¹ MCSD Water Reclamation Study, McKinleyville, CA</p>				
Crop	Typical Yield (acre-yr)	Percent of Dry Harvest Material		
		Nitrogen (N)	Phosphorous (P)	Potassium (K)
Ryegrass	5 tons	1.67	0.27	1.42
Orchardgrass	6 tons	1.47	0.20	2.16
Tall Fescue	3.5 tons	1.97	0.20	2.00
Clover-grass	6 tons	1.52	0.27	1.69
Average	5 tons	1.66	0.24	1.82
1. USEPA, 2006				

If equal distribution of the listed plant species were to be used, assumed annual yield would be 5 tons/acre. Average annual nutrient yield based on a 5-ton (10,000-pound) harvest would equal removal of approximately 170 pounds nitrogen, 24 pounds phosphorus, and 186 pounds potassium per acre. U.C. Davis has reported fertilization requirements of 206 pounds nitrogen per acre for equal plantings of the same species mix (UCCE, 2009).

7.0 Area Required to Meet Agronomic Rates

7.1 Wastewater Nutrient Loading

Annual nitrogen loading per acre is estimated, assuming that wastewater effluent ammonia concentrations will be used to grow hay grass on the Upper Fisher, Lower Fisher, and Pialorsi Ranches, which provide 28, 45, and 35 acres of land for reclamation, respectively. Data worksheets showing the nutrient loading calculations are included in Appendix B.

A comparison of the recommended nitrogen loading rates (approximately 170 pounds per acre, based on current crop cover) with the observed nitrogen loading rates from 2008 indicates that the Upper Fisher, Lower Fisher, and Pialorsi Ranches received nitrogen at approximately 385%, 22%, and 85% of agronomic rates, respectively. Based on nitrogen loading estimates from 2008, approximately 150 acres are required to balance effluent nitrogen loading with crop agronomic rates of uptake equally; the existing reclamation area supplies 73% of that target.

A comparison of the recommended nitrogen loading rates with the observed nitrogen loading rates from 2009 indicated a similar distribution; the Upper Fisher, Lower Fisher, and Pialorsi Ranches received nitrogen at approximately 520%, 25%, and 72% of agronomic rates, respectively. Based on nitrogen loading estimates from 2009, approximately 180 acres are required to balance effluent nitrogen loading with crop agronomic rates of uptake equally; the existing reclamation area supplies 60% of that target.

Overall, the reclamation area available appears to be sufficient for the existing nutrient loading if the effluent application were distributed proportionally.

Treated wastewater contains many essential nutrients; however, if ratios are inadequate, nutrient management should be employed. Optimum nutrient ratios to ensure proper nutrient use are generally 4 parts Nitrogen to 1 part Phosphorous to 2 parts Potassium (4N:1P:2K). MCSD effluent is sampled for nitrogen; however, the phosphorus and potassium concentrations are not characterized as part of their monitoring program. To ensure that optimum nutrient uptake is occurring, effluent phosphorus and potassium will be measured.

7.2 Crop Management

Common agricultural and field crops are often used for slow rate wastewater reclamation for nitrogen removal. Overland flow systems require perennial close-growing grass crops to support microbes (USEPA, 2006). Species used for overland flow sites include tall fescue, perennial ryegrass, orchardgrass, and reed canary grass (USEPA, 1973). The irrigation methods employed at the MCSD reclamation areas require plants that have tolerance to wastewater constituents and may be maintained with minimal management requirements.

8.0 Area Required for Irrigation

To evaluate the irrigation pattern currently used by MCSD to reclaim wastewater effluent, the following items were addressed:

- Hydrologic Properties of Soil
- Climate Data
- Irrigation Season
- Water Balance

8.1 Hydrologic Soil Properties

The Upper Fisher Ranch soils have been defined as coarse loam with an observed rooting depth of 36 to 45 inches (NRCS, 2010). The Lower Fisher Ranch soils have been defined as the fine silt Arlynda soil series, which was observed with rooting depths of 22 to 41 inches (NRCS, 2010). These soil qualities are used to estimate soil porosity, field capacity and the Available Water Holding Capacity (AWHC), which are summarized in Table 5. AWHC is a measure of the total amount of water stored in the soil that is available to the plant, or the capacity of the soil. Field capacity is the upper limit of stored water in the soil once free drainage has occurred. When a soil is at field capacity, the soil reservoir is completely full. Hydrologic soil properties are used to develop irrigation schedules to maximize crop production by providing sufficient water supply and to reduce surplus runoff.

<p align="center">Table 5 Hydrologic Soil Properties for MCSD Reclamation Areas MCSD Water Reclamation Study, McKinleyville, CA</p>		
Soil Properties	Upper Fisher Ranch	Lower Fisher Ranch
Soil Class	Coarse loam¹	Fine silt¹
Porosity	46%²	47%²
Field Capacity	24%²	28%²
Wilting Point	10%²	15%²
Rooting Depth	36 – 45 inches¹	22 – 41 inches¹
AWHC within the Root Zone	5 – 7 inches	4 – 8 inches
<p>1. Source: NRCS soil series descriptions for Arcata and Arlynda soils</p> <p>2. Source: Dunne and Leopold, 1978</p>		

8.2 Climate Data

Monthly average precipitation at the Eureka Woodley Island weather station for the period of record from 1948 through 2009 has been summarized by the Western Regional Climate Center (WRCC, 2010). Approximately 90% of total rainfall occurs from October through April, which is considered the wet season.

Evapotranspiration (ET) is the loss of water to the atmosphere by the combined processes of evaporation (from soil and plant surfaces) and transpiration (from plant tissues). Reference ET (ET_0) is the ET rate of a reference crop, typically a standardized grass surface. A reference map of ET_0 zones in California has been developed by the California Irrigation Management Information System (CIMIS, 1999). McKinleyville is within Zone 1 (coastal plains) characterized by dense fog.

Crop evapotranspiration (ET_C) is a measure of the plant transpiration plus the soil surface evaporation. The ET_C rate is estimated as the product of a crop coefficient and ET_0 . The crop coefficient for hay grass ranges from 0.6 near dormancy to 0.95 during the period of maximum growth, with an average of 0.82 during the growing season. The climate data used for the water balance is summarized in Table 6.

<p align="center">Table 6 Climate Data for MCSD Reclamation Areas MCSD Water Reclamation Study, McKinleyville, CA</p>												
Parameter	Wet Season				Dry Season					Wet Season		
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Precipitation (inches) ¹	5.88	5.71	5.38	3.12	1.61	0.69	0.19	0.36	0.87	2.44	5.93	6.15
ET ₀ (inches) ²	0.93	1.40	2.48	3.30	4.03	4.50	4.65	4.03	3.30	2.48	1.20	0.62
K _C ³	0.60	0.60	0.73	0.91	0.95	0.95	0.87	0.80	0.80	0.73	0.65	0.60
ET _C (inches)	0.56	0.84	1.81	3.01	3.83	4.28	4.05	3.22	2.64	1.81	0.78	0.37
Potential storage	---	---	---	---	2.2	3.6	3.9	2.9	1.8	---	---	---
<p>1. Eureka at Woodley Island for period of record 1949-2009 (WRCC, 2010)</p> <p>2. ET₀: Reference evapotranspiration (CIMIS, 2010)</p> <p>3. K: Potassium (BLM, 2010)</p>												

8.3 Irrigation Season

The irrigation season (dry season) is defined as the months where the monthly ET_C rate is greater than the monthly precipitation rate. As shown in Table 6, the irrigation season is from May through September. The difference between the precipitation rate and the ET_C rate during the irrigation season is a measure of the potential storage available in the soil. The potential available storage in the soil during the irrigation season is 14.4 inches.

8.4 Water Balance

The goal of a water balance calculation is to determine if the wastewater effluent irrigation is applied at reclamation rates to the application areas. The following assumptions were made:

1. The irrigation season begins with the top 24 inches of the root zone at field capacity and irrigation rates are managed based on flow data from 2008 and 2009.
2. The irrigation efficiency is 75%.
3. Permeability is controlled by the most restrictive soil horizons within the soil layer.

Management Allowable Depletion (MAD) is the percent of the AWHC, which an irrigator will allow the crop to deplete before irrigating. Typically, depending on the crop and soil type, a MAD above 50% results in stress to the crop and yield reduction. The results of the water balance for each reclamation area are summarized in Table 7. Negative MAD values are representative of surplus water conditions (no soil moisture deficit) and may indicate periods when water drains from the soil layer toward the groundwater or ponds.

Table 7
Water Balance for Irrigation Practices at Reclamation Areas¹
MCSD Water Reclamation Study, McKinleyville, CA

Month	Monthly Average Precipitation (in/day)	Monthly Average Et _c (in/day)	Assumed Irrigation Duration (hours/day)	Upper Fisher Ranch		Lower Fisher Ranch		Pialorsi Ranch	
				Monthly Average Application Rate (in/day)	Monthly Average MAD ² (%)	Monthly Average Application Rate (in/day)	Monthly Average MAD (%)	Monthly Average Application Rate (in/day)	Monthly Average MAD (%)
May	0.05	0.12	18	0.00	19%	0.04	11%	0.09	5%
June	0.02	0.14	18	0.25	2%	0.01	39%	0.12	-9%
July	0.00	0.13	18	0.39	-102%	0.04	82%	0.11	-5%
August	0.01	0.10	18	0.51	-288%	0.05	112%	0.11	-5%
September	0.02	0.09	18	0.38	-482%	0.06	126%	0.11	-17%
October	0.08	0.06	18	0.56	-718%	0.05	112%	0.11	-55%
November	0.18	0.03	18	0.70	-1107%	0.00	56%	0.07	-140%
December	0.23	0.01	18	0.70	-1585%	0.00	-30%	0.08	-263%

1. Based on 2008 effluent distribution data

2. MAD: Management Allowable Depletion

9.0 Conclusions

The Upper Fisher Ranch is not currently operated for reclamation; wastewater effluent is applied by overland flow irrigation methods in quantities that exceed agronomic rates for hay grass. Nitrate concentrations have been measured in the groundwater monitoring wells above MCLs, demonstrating that: 1) the retention time in the vadose zone is not long enough for plants to assimilate available nitrogen, 2) nitrogen loading is too high for the system, and/or 3) the irrigation rates are too high and nitrogen is leaching into the groundwater. Opportunities to increase irrigation on the lower pastures may balance these effects. The efficiency of nutrient uptake could also be increased by crop selection, scheduled planting and harvest, and checking the balance of nitrogen to phosphorus and potassium.

There is no evidence that salts are building up in the soil at damaging rates. The soil properties of the Upper Fisher Ranch allow for adequate flushing during the wet season. Soil fertility testing in the Lower Fisher Ranch demonstrated that soil salinity is low.

In summary, the conclusions of this Reclamation Study demonstrate that wastewater reuse on the existing wastewater reclamation areas does not conform to the current WDRs for reclamation activities. In accordance with current permit requirements, based on these conclusions, MCSD is required to either:

- a. Submit a written proposal to either study alternatives to comply with reclamation/recycling requirements, or
- b. Submit a revised report of waste discharge and apply for a permit to conduct land disposal.

To comply with this requirement, MCSD will be submitting a written proposal to study alternatives to comply with reclamation/recycling requirements by August 1, 2011. MCSD has indicated they are currently in the process of negotiating a new lease agreement for the use of the Lower Fisher Ranch. Selection of a new land manager for this location will provide an opportunity to modify the current land management practices to promote additional reclamation.

10.0 Recommendations

The following recommendations have also been developed to optimize nutrient uptake, confirm assumptions, and assist in reclamation operations.

1. Based on low TDS concentrations in the wastewater effluent, it has been assumed that concentrations of iron, manganese, and sodium are correspondingly low. To confirm these assumptions, these parameters will be tested during the 2011 discharge season.
2. To confirm that the TDS concentrations observed in groundwater are not indicative of the TDS concentrations in the perched groundwater zone, TDS should be measured in the shallow piezometers on the Lower Fisher Ranch.
3. The reclamation area available appears to be sufficient for the existing nutrient loading if the effluent application were distributed proportionally. Effluent should be redistributed among the existing reclamation areas to optimize plant growth and nitrogen uptake.

4. To ensure that optimum nutrient uptake is occurring, effluent phosphorus and potassium should be measured.
5. Grass mixes for Upper Fisher Ranch should be limited to perennial close-growing grass crops to optimize microbial population production.

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CLIENT: 2946

SUBMITTED BY:

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812 W. WABASH
EUREKA, CA 95501-

GROWER: MCSD

DATE OF REPORT: 07/23/09

SOIL PHYSICAL CHARACTERISTICS

PAGE: 1

Sample ID	Lab Number	% Sand	% Silt	% Clay	Soil Texture	Moisture @ 1/3 Bar	Moisture @ 15 Bar	Available Water %
T1-PH	51004	20	56	23	SILT LOAM			
T2-DH	51005	36	46	17	LOAM			
T3-DH	51006	28	52	19	SILT LOAM			
T4-DH	51007	24	52	23	SILT LOAM			

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GROWER: MCSD

DATE OF REPORT: 07/24/09

SOIL SALINITY ANALYSIS REPORT

PAGE: 1

Sample ID	Lab Number	SAR	ESP	Na meq/L	Ca meq/L	Mg meq/L	pH	CO ₃ meq/L	HCO ₃ meq/L	E.C. dS/m	Cl meq/L	B ppm	Saturation %
T1-DH	51004	2.9	2.9	2.8	1.1	0.7	7.0	0.0	1.8	0.5	1.2	0.4	53.1
T2-DH	51005	2.3	2.1	2.0	0.9	0.5	6.8	0.0	1.6	0.3	1.0	0.3	50.5
T3-DH	51006	4.1	4.6	3.7	0.8	0.7	7.1	0.0	1.6	0.4	1.4	0.4	59.9
T4-DH	51007	6.4	7.6	8.3	1.8	1.5	7.1	0.0	2.4	0.7	3.5	0.5	49.3

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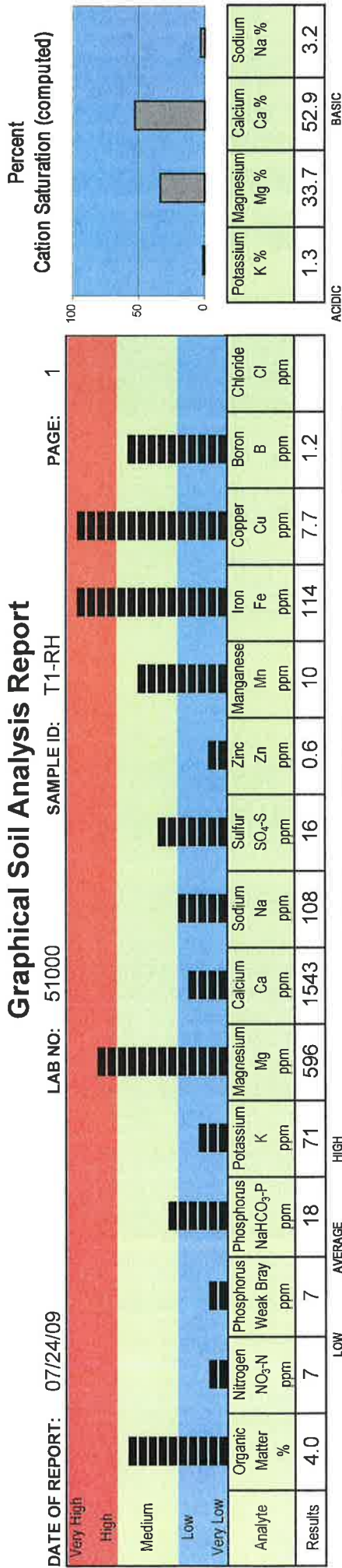
Graphical Soil Analysis Report

DATE OF REPORT: 07/24/09

LAB NO: 51000

SAMPLE ID: T1-RH

PAGE: 1



Soil Fertility Guidelines

CROP: CLOVER

RATE: lb/acre

NOTES:

Dolomite (70 score)	Lime (70 score)	Gypsum	Elemental Sulfur	Nitrogen N	Phosphate P ₂ O ₅	Potash K ₂ O	Magnesium Mg	Sulfur SO ₄ -S	Zinc Zn	Manganese Mn	Iron Fe	Copper Cu	Boron B
		1800		10	70	180			10				

C HIGH levels of organic matter should have a beneficial effect on growth and "soil" pH may not be as critical. However, watch carefully as amendments and extra nitrogen may still be necessary.

O

M **MAGNESIUM:** If base saturation exceeds 25% one may encounter drainage problems and potassium uptake may be hindered. Extra calcium may provide some benefit, but source should depend on soil pH.

M

E **CALCIUM:** As a guideline, (CEC x 200 x 0.65) - ppm Ca on soil report = lb Ca required per 3 acre-inch soil depth to raise to 65% Ca. Gypsum contains about 400 lb/ton, and lime possibly 600 lb/ton.

N

T **LIME RECOMMENDATION** is to raise a six-inch depth of soil to a pH of only about 6.5. You may wish to apply slightly more if aiming for a pH closer to 7.0 to 7.5.

S

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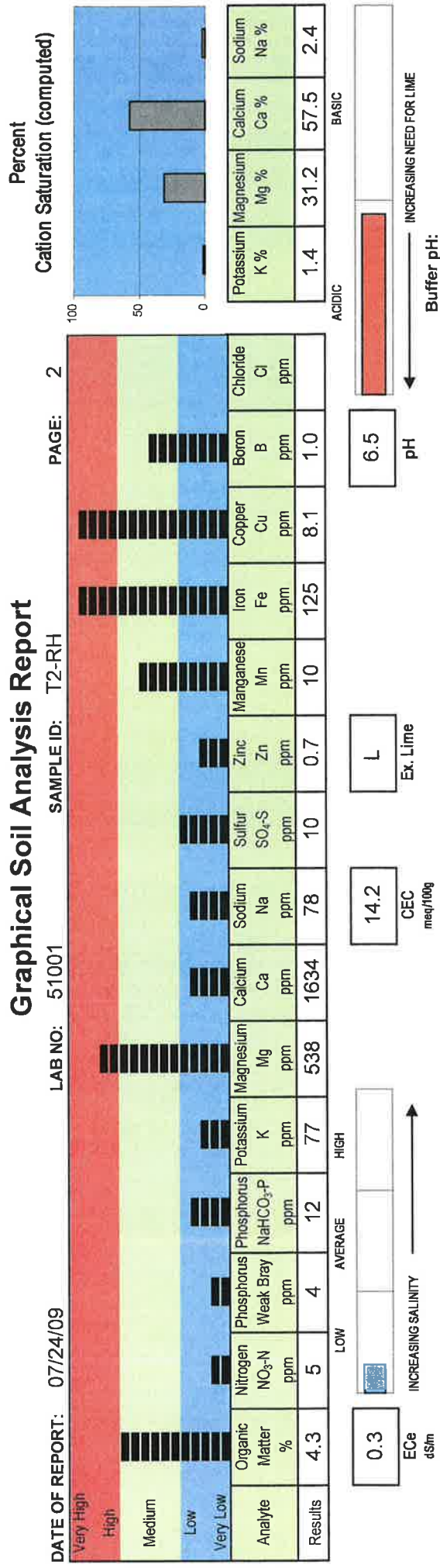
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GROWER: MCSD

Graphical Soil Analysis Report

DATE OF REPORT: 07/24/09 LAB NO: 51001 SAMPLE ID: T2-RH PAGE: 2



Soil Fertility Guidelines

CROP: CLOVER

RATE: lb/acre

Dolomite (70 score)	Lime (70 score)	Gypsum	Elemental Sulfur	Nitrogen N	Phosphate P ₂ O ₅	Potash K ₂ O	Magnesium Mg	Sulfur SO ₄ -S	Zinc Zn	Manganese Mn	Iron Fe	Copper Cu	Boron B
		1000		10	70	180			10				

C NITROGEN: Up to 50 lb/ac of nitrogen should be "available" for establishment, whether from added
O fertilizer or existing NO₃-N in the soil. Excess nitrogen may encourage weeds and grasses.
M POTASH REMOVAL: Keep an eye on potash requirements if removing ALL the above-ground portion of the crop
M from the field. Large quantities of potash may be removed each year.
E ZINC: Maintain soil levels above 1.0 ppm to ensure an adequate zinc supply. A tissue analysis at the
N appropriate time will determine more accurately, availability to the plant.
T PLEASE note that the previous comments where applicable, apply to the entire report. Thank you.
S

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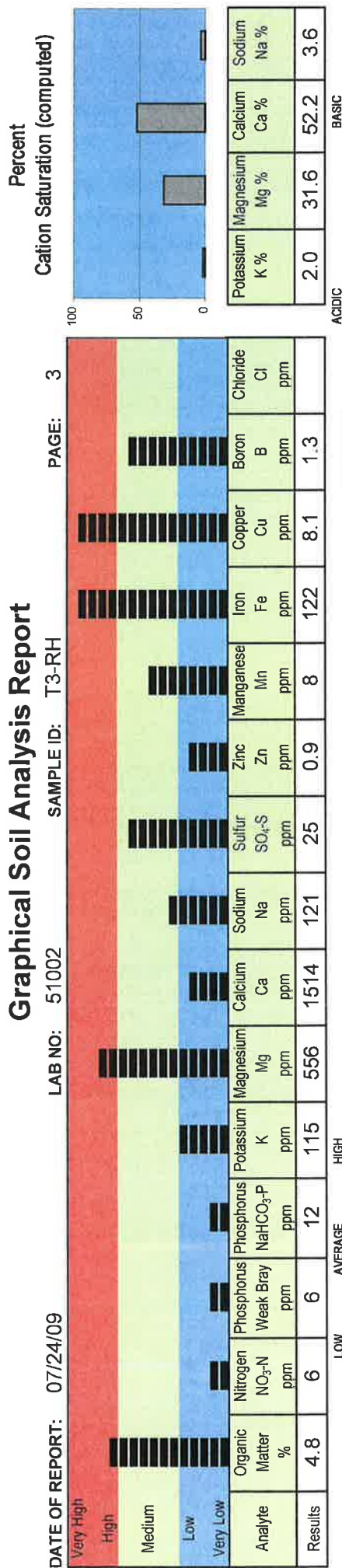
Graphical Soil Analysis Report

DATE OF REPORT: 07/24/09

LAB NO: 51002

SAMPLE ID: T3-RH

PAGE: 3



Soil Fertility Guidelines

CROP: CLOVER

RATE: lb/acre

NOTES:

Dolomite (70 score)	Lime (70 score)	Gypsum	Elemental Sulfur	Nitrogen N	Phosphate P ₂ O ₅	Potash K ₂ O	Magnesium Mg	Sulfur SO ₄ -S	Zinc Zn	Manganese Mn	Iron Fe	Copper Cu	Boron B
	2000			10	70	150		10	10				

COMMENTS

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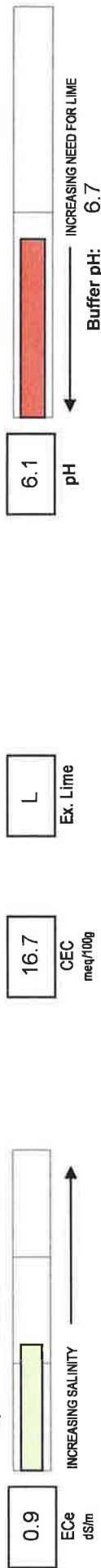
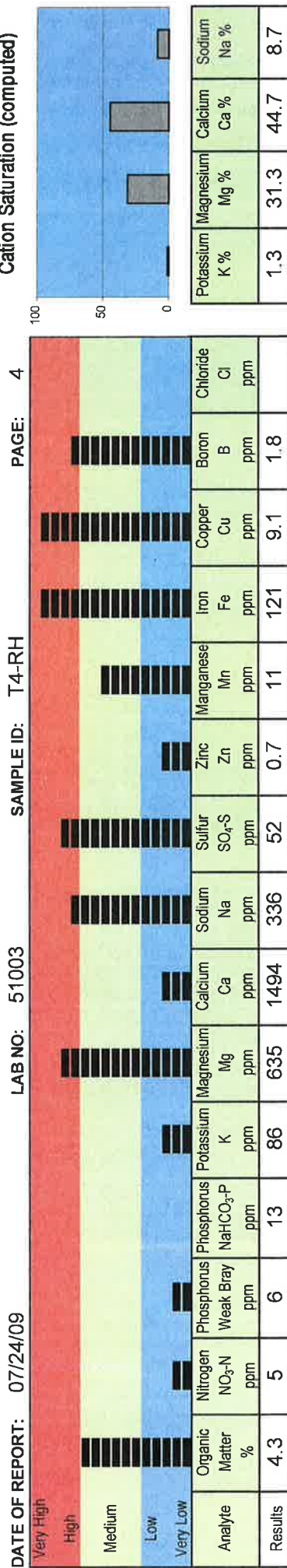
CLIENT NO: 2946

SEND TO: SHN CONSULTING ENGINEERS
812 W. WABASH
EUREKA, CA 95501-

SUBMITTED BY: ROSE P

GROWER: MCSD

Graphical Soil Analysis Report



NaHCO₃-P unreliable at this soil pH

Soil Fertility Guidelines

CROP: CLOVER

RATE: lb/acre

Dolomite (70 score)	Lime (70 score)	Gypsum	Elemental Sulfur	Nitrogen N	Phosphate P ₂ O ₅	Potash K ₂ O	Magnesium Mg	Sulfur SO ₄ -S	Zinc Zn	Manganese Mn	Iron Fe	Copper Cu	Boron B
	3000			10	200	180			10				

COMMENTS

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Mike Buttress

Mike Buttress, CPAg

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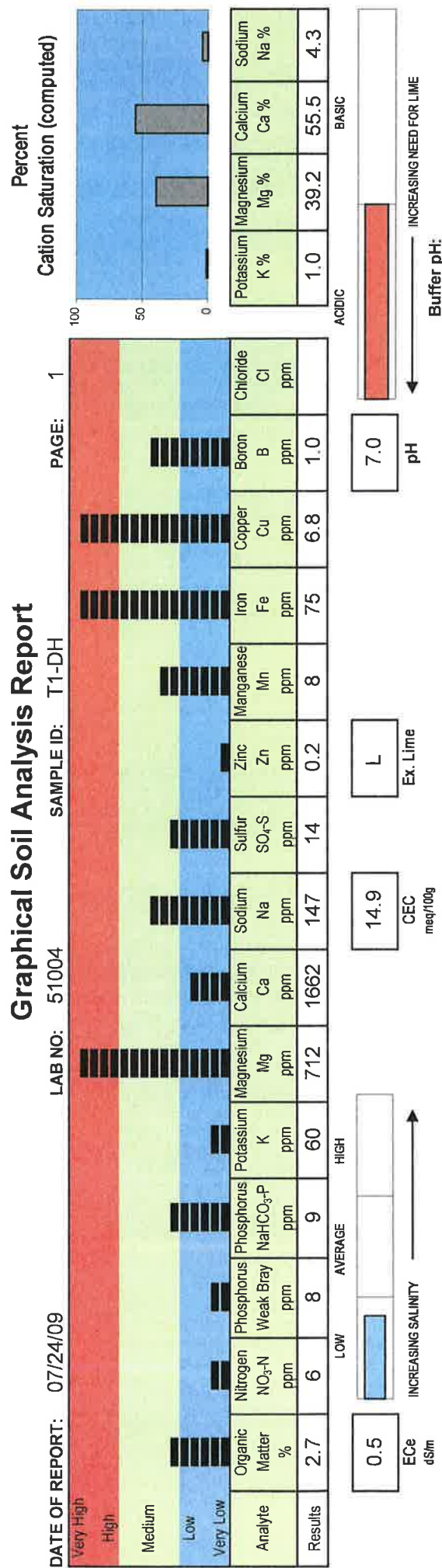
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SUBMITTED BY: ROSE P

GROWER: MCSD



DATE OF REPORT: 07/24/09 LAB NO: 51004 SAMPLE ID: T1-DH PAGE: 1



Soil Fertility Guidelines

CROP: CLOVER

RATE: lb/acre

NOTES:

Dolomite (70 score)	Lime (70 score)	Gypsum	Elemental Sulfur	Nitrogen N	Phosphate P ₂ O ₅	Potash K ₂ O	Magnesium Mg	Sulfur SO ₄ -S	Zinc Zn	Manganese Mn	Iron Fe	Copper Cu	Boron B
		1400		20	100	180			10				

C SOIL SALINITY REPORT indicates that water infiltration problems may be encountered. Follow guidelines where necessary, after reviewing the quality of your water source.

MAGNESIUM: If base saturation exceeds 25% one may encounter drainage problems and potassium uptake may be hindered. Extra calcium may provide some benefit, but source should depend on soil pH.

NITROGEN: Up to 50 lb/ac of nitrogen should be "available" for establishment, whether from added fertilizer or existing NO₃-N in the soil. Excess nitrogen may encourage weeds and grasses.

T S ZINC: Maintain soil levels above 1.0 ppm to ensure an adequate zinc supply. A tissue analysis at the appropriate time will determine more accurately, availability to the plant.

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REPORT NUMBER: 09-198-055

CLIENT NO: 2946

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EUREKA, CA 95501-

GROWER: MCS D

SUBMITTED BY: ROSE P

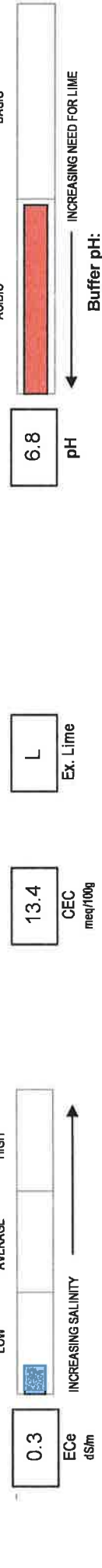
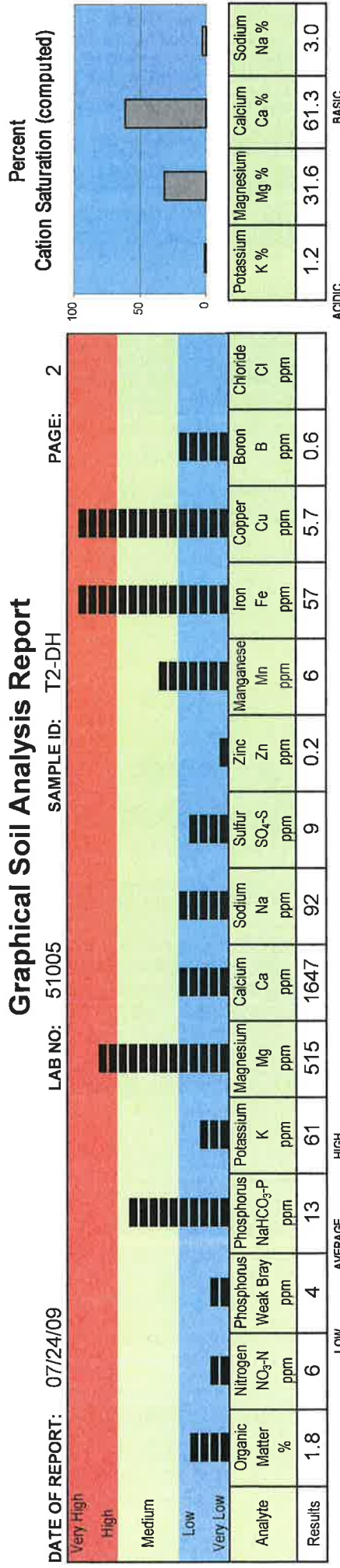
Graphical Soil Analysis Report

DATE OF REPORT: 07/24/09

LAB NO: 51005

SAMPLE ID: T2-DH

PAGE: 2



Soil Fertility Guidelines

CROP: CLOVER

Dolomite (70 score)	Lime (70 score)	Gypsum	Elemental Sulfur	Nitrogen N	Phosphate P ₂ O ₅	Potash K ₂ O	Magnesium Mg	Sulfur SO ₄ -S	Zinc Zn	Manganese Mn	Iron Fe	Copper Cu	Boron B
		500		20	70	180			10				

COMMENTS

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REPORT NUMBER: 09-198-055

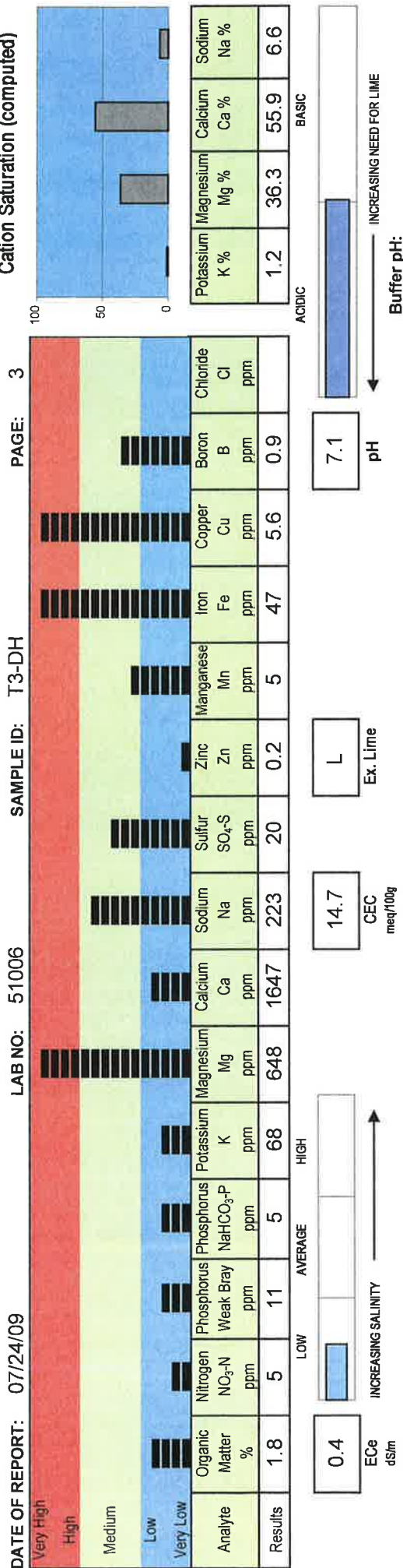
CLIENT NO: 2946

SEND TO: SHN CONSULTING ENGINEERS
812 W. WABASH
EUREKA, CA 95501-

SUBMITTED BY: ROSE P

GROWER: MCSD

Graphical Soil Analysis Report



Soil Fertility Guidelines

CROP: CLOVER

RATE: lb/acre

Dolomite (70 score)	Lime (70 score)	Gypsum	Elemental Sulfur	Nitrogen N	Phosphate P ₂ O ₅	Potash K ₂ O	Magnesium Mg	Sulfur SO ₄ -S	Zinc Zn	Manganese Mn	Iron Fe	Copper Cu	Boron B
		2300		20	160	180			10				

COMMENTS

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REPORT NUMBER: 09-198-055

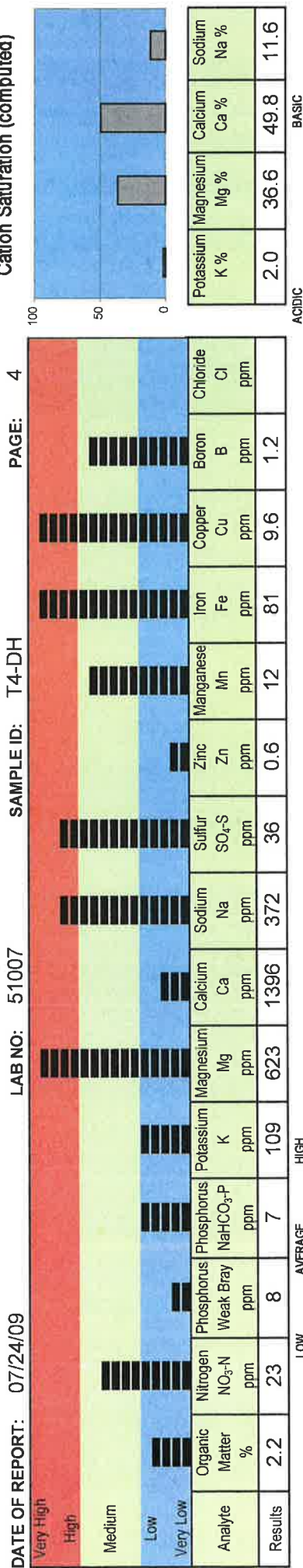
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EUREKA, CA 95501-

SUBMITTED BY: ROSE P

GROWER: MCSD

Graphical Soil Analysis Report



Soil Fertility Guidelines

CROP: CLOVER

RATE: lb/acre

Dolomite (70 score)	Lime (70 score)	Gypsum	Elemental Sulfur	Nitrogen N	Phosphate P ₂ O ₅	Potash K ₂ O	Magnesium Mg	Sulfur SO ₄ -S	Zinc Zn	Manganese Mn	Iron Fe	Copper Cu	Boron B
		3800			100	180			10				

COMMENTS

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McKINLEYVILLE COMMUNITY SERVICES DISTRICT
WASTEWATER MANAGEMENT FACILITY
EFFLUENT DISCHARGE DISPOSAL TOTALS 2008

DATE	M-001 EFFLUENT MG	M-005 FISCHER UPPER MG	M-004 FISCHER LOWER MG	M-007 PIALORSI MG	M-006 HILLER MG	IRRIGATE TOTAL MG	M-002 RIVER MG	Upper Fisher Ranch				Pialorsi Ranch			
								Total Total Nitrogen Loading tons/mo	Total Nitrogen Loading lbs/mo	Total Nitrogen Loading lbs/mo	Total Nitrogen Loading lbs/mo	Total Nitrogen Loading lbs/mo	Total Nitrogen Loading lbs/mo	Total Nitrogen Loading lbs/mo	Total Nitrogen Loading lbs/mo
JANUARY	41.8	0.0	0.0	0.0	0.0	0.0	41.8	4.82	0	0	0	0	0	0	0
FEBRUARY	45.9	0.0	0.0	0.0	0.0	0.0	45.9	5.31	0	0	0	0	0	0	0
MARCH	34.4	0.0	0.0	0.0	0.0	0.0	34.4	3.77	0	0	0	0	0	0	0
APRIL	33.3	0.0	0.0	0.0	0.0	0.0	33.3	3.58	0	0	0	0	0	0	0
MAY	20.9	0.0	0.6	1.2	0.2	2.0	13.0	2.26	0	0	0	0	0	0	0
JUNE	18.4	6.7	0.3	4.9	0.5	12.3	0.0	1.79	1301	0	134	56	257	958	0
JULY	23.6	10.4	2.0	4.2	1.1	17.7	0.0	2.23	1964	0	377	377	788	788	0
AUGUST	29.1	14.8	2.3	4.2	0.0	21.3	0.0	2.65	2689	0	427	427	764	764	0
SEPTEMBER	22.7	9.2	2.5	3.9	1.2	16.7	0.0	2.47	2006	0	533	533	843	843	0
OCTOBER	26.2	15.0	0.6	3.4	0.7	19.7	0.0	2.82	3236	0	130	130	721	721	0
NOVEMBER	32.0	21.7	0.0	1.9	1.4	25.0	0.0	3.30	4468	0	0	0	389	389	0
DECEMBER	33.6	12.6	0.0	1.5	1.1	15.3	12.6	3.56	2676	0	0	0	321	321	0
Totals	362.0	90.4	8.3	25.1	6.2	130.0	181.1	TOTAL	18341	1656	5041	5041	5041	5041	5041
% EFFLUENT =								ACRES	28	45	35	35	35	35	35
								LBS/ACRE	655	37	144	144	144	144	144

AGRONOMIC RATE = 170 lb/acre 385% 22% 85%

NECESSARY ACREAGE = 147 ACRES
EXISTING ACREAGE = 108
EXISTING ACREAGE MEETING TARGET = 73%

McKINLEYVILLE COMMUNITY SERVICES DISTRICT
WASTEWATER MANAGEMENT FACILITY
EFFLUENT DISCHARGE DISPOSAL TOTALS 2009

DATE	M-001 EFFLUENT MG	M-005 FISCHER UPPER MG	M-004 FISCHER LOWER MG	M-007 PIALORSI MG	M-006 HILLER MG	IRRIGATE TOTAL MG	M-002 RIVER MG	Upper Fisher Ranch				Pialorsi Ranch			
								Total Total Nitrogen Loading tons/mo	Total Nitrogen Loading lbs/mo	Total Nitrogen Loading lbs/mo	Total Nitrogen Loading lbs/mo	Total Nitrogen Loading lbs/mo	Total Nitrogen Loading lbs/mo	Total Nitrogen Loading lbs/mo	Total Nitrogen Loading lbs/mo
JANUARY	40.8	0.0	0.0	0.0	0.0	0.0	40.8	4.61	0	0	0	0	0	0	0
FEBRUARY	28.5	1.8	0.0	0.0	0.0	1.8	24.8	3.02	380	0	0	0	0	0	0
MARCH	43.6	0.0	0.0	0.0	0.0	0.0	43.6	4.58	0	0	0	0	0	0	0
APRIL	30.7	1.4	0.0	0.0	0.0	1.4	29.3	3.58	330	0	0	0	0	0	0
MAY	25.8	5.1	0.0	0.8	0.5	6.4	12.1	2.99	1174	0	0	0	0	180	0
JUNE	26.2	13.4	0.0	4.5	2.5	20.4	0.0	3.00	3073	0	0	0	0	1023	0
JULY	24.2	11.1	0.0	4.4	1.6	17.1	0.0	2.77	2538	0	0	0	0	1018	0
AUGUST	23.6	9.4	0.0	3.9	2.6	16.0	0.0	2.36	1884	0	0	0	0	785	0
SEPTEMBER	26.5	11.7	0.9	4.3	2.7	18.4	0.0	2.97	2622	194	194	0	0	974	0
OCTOBER	30.3	16.1	4.3	1.1	0.0	21.5	0.0	3.92	4168	1104	1104	0	0	285	0
NOVEMBER	31.3	23.0	2.4	0.0	0.1	25.5	0.0	3.96	5812	600	600	0	0	0	0
DECEMBER	32.9	11.3	0.0	0.0	1.5	12.7	16.7	4.27	2926	0	0	0	0	0	0
Totals	364.4	104.2	7.5	19.1	11.4	141.1	167.3	TOTAL	24907	1898	1898	4265	4265	4265	4265
% EFFLUENT =								ACRES	28	45	35	35	35	35	35
								LBS/ ACRE	890	42	122	122	122	122	122

AGRONOMIC RATE = 170 lb/acre 523% 25% 72%

NECESSARY ACREAGE = 183 ACRES

EXISTING ACREAGE = 108

EXISTING ACREAGE MEETING TARGET = 59%



Reference: 011034.030

November 1, 2011

Ms. Lisa Bernard
California Regional Water Quality Control Board
North Coast Region
5550 Skylane Boulevard, Suite A
Santa Rosa, CA 95540

**Subject: 2011 Treatment Pond Ammonia Concentration Reduction Efforts,
McKinleyville Community Services District, McKinleyville, California;
WDR Order No. WQ 2011-0008-DWQ; NPDES Permit No. CA0024490;
WDID No. 1B82084OHUM**

Dear Ms. Bernard:

On December 9, 2009, SHN Consulting Engineers & Geologists, Inc. (SHN) submitted an *Aquatic Plant Establishment Plan* to the RWQCB on behalf of the McKinleyville Community Services District (MCSD). The intent of the work plan was to propose a short-term solution for dealing with effluent ammonia toxicity issues at the MCSD Wastewater Management Facility (WWMF), located in McKinleyville, California (Figure 1).

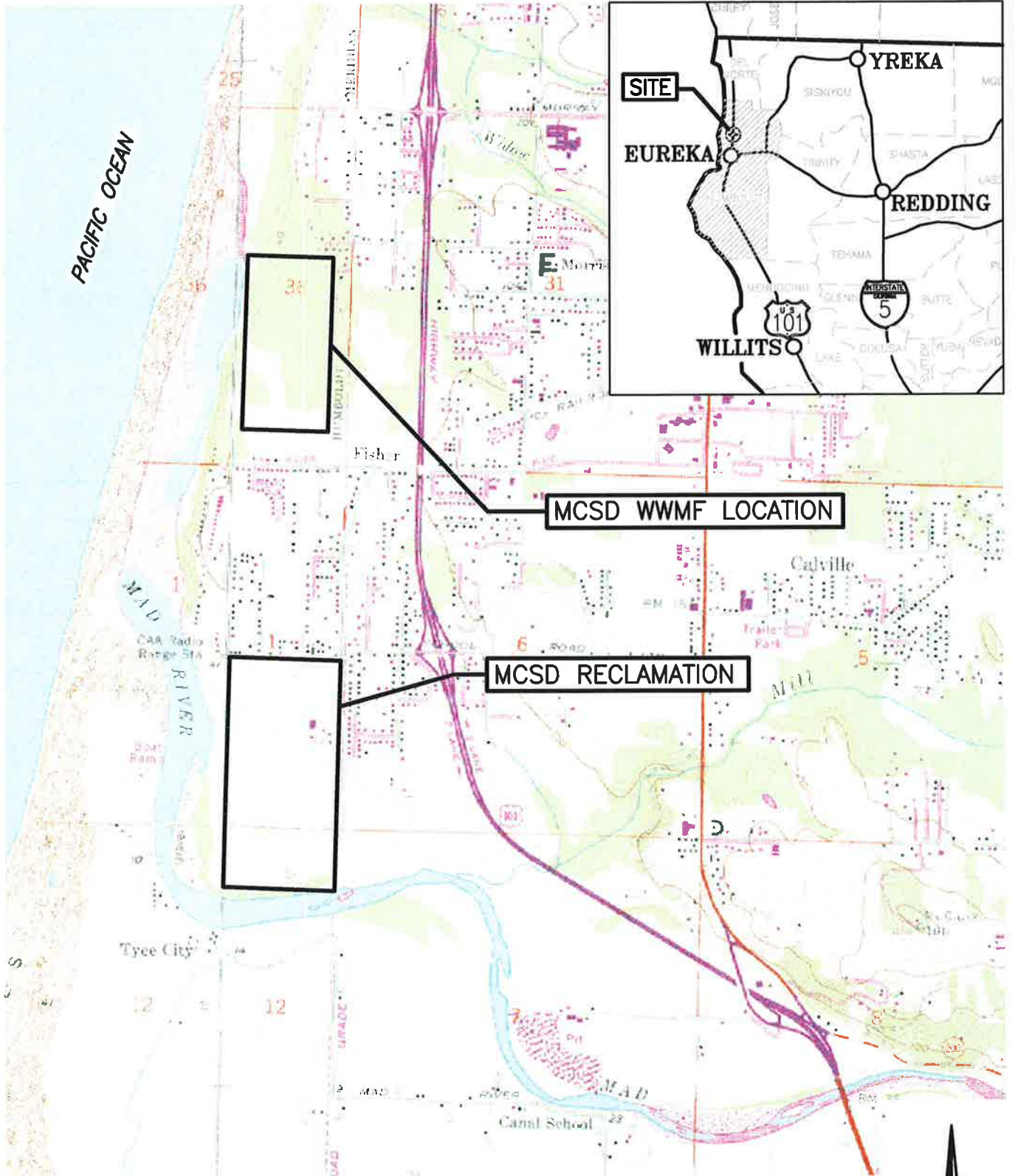
In June 2010, MCSD installed Submerged Aquatic Vegetation (SAV) into Pond 3 and monitored ammonia, nitrate, dissolved oxygen and temperature upstream and downstream of the pilot study. The presence of the SAV resulted in a short-term improvement in the WWMF effluent water quality; however, the plants were consumed by waterfowl before a significant population could be established. MCSD planned to repeat the experiment in 2011 with a more significant supply of SAV.

On July 22, 2011, MCSD installed SAV in Ponds 3 and 4 for a second attempt to decrease ammonia within the treatment pond system. On August 17, 2011, MCSD installed a fine bubble air diffuser between Ponds 3 and 4 to supply additional oxygen. The purpose of this letter is to summarize the findings of the data collected after the 2011 introduction of SAV and the installation of a fine bubble air diffuser between Ponds 3 and 4. Both of these efforts were performed to promote the reduction of ammonia within the treatment pond system.

Treatment Pond Ammonia Concentration Reduction Efforts

Ceratophyllum demersum (common name: coon's tail) was selected as the SAV species of choice to promote nitrification in Ponds 3 and 4 because of its reported growth characteristics, tolerances, and local availability. This species has a multiple stem growth form, high anaerobic and calcium carbonate (CaCO₃) tolerances, and is tolerant of higher pH environments (USDA, 2009). MCSD performed a bench test in 2009 to verify the nitrification abilities of *C. demersum* and its viability in wastewater from Pond 3. MCSD conducted a similar test in 2011.

FA 2011\011034-MCSD-MSA\030-Public-Relations-Activities\Drawings\SAVED: 11/2/2011 11:21 AM RPATENAUDE, PLOTTED: 11/2/2011 11:24 AM, J. ROSE PATENAUDE



**SOURCE: ARCATA NORTH & TYEE CITY
USGS 7.5 MINUTE QUADRANGLE**


1"=2,000'±



Consulting Engineers
& Geologists, Inc.

McKinleyville Community Services District
Wastewater Management Facility
McKinleyville, California

November 2011

Site Location Map

SHN 011034

011034-SITE-LCTN

Figure 1

The north end of Pond 3 received 730 cubic feet of SAV and 150 cubic feet of SAV was placed in the deep, northern end of Pond 4. Water quality monitoring began on July 14, 2011, and was performed every weekday morning for 14 weeks. Temperature, pH, and dissolved oxygen concentration were measured in Pond 3, downstream of the plants. Ammonia and nitrate concentrations were measured upstream of the plants in Pond 2, downstream of the plants in Pond 3, and in the outlet of Pond 4. Monitoring at the Pond 4 outlet started on August 17, 2011.

In general, temperatures in Pond 3 ranged from 15.9 to 21.9 °C, decreasing gradually over the monitoring period and pH ranged from 7.4 to 8.5, increasing gradually over the monitoring period. Dissolved oxygen ranged from 0.3 to 14.9 milligrams per Liter (mg/L), increasing significantly from the end of August through the end of the monitoring period. Ammonia concentrations slowly increased in all monitored ponds until the end of August and then decreased until the end of the monitoring period. Nitrate was not detected at any time. Nitrification of ammonia can only occur when oxygen is abundant. The relation between these parameters can be clearly observed by the data shown in Figure 2.

By August 26, 2011, the SAV volume had decreased significantly due to predation and die off. It seems reasonable that the reduction in ammonia presented at the end of the season was more a product of the bubble air diffuser and less of a result of the vegetation. The overall goal of establishing SAV in the treatment ponds was not successful and their presence in 2011 did not improve the WWMF effluent water quality. These results are not conclusive of the SAV's ability to improve nitrification processes and decrease ammonia, given that the bench tests demonstrated that the introduction of SAV to treatment water improved these conditions.

It is apparent, however, that low oxygen levels within the treatment ponds have limited the potential for nitrification to occur and that the introduction of additional air improved the WWMF effluent water quality.

Recommendation

SHN recommends that MCSD continue to monitor the treatment ponds for temperature, pH, dissolved oxygen and ammonia removal improvements as a result of the bubble air diffuser throughout the next year.

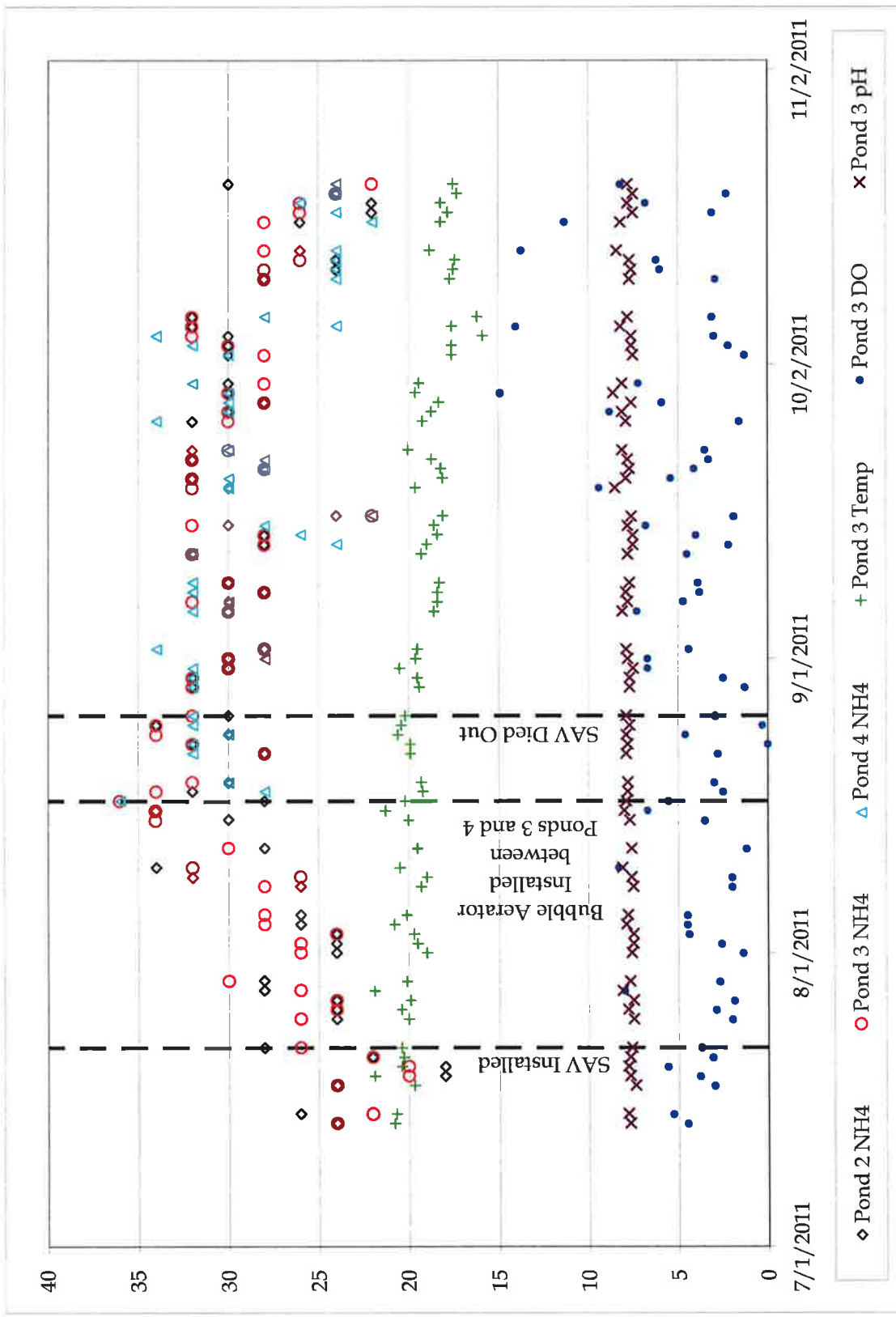


Figure 2. Treatment Pond Water Quality

Ms. Lisa Bernard
2011 Treatment Pond Ammonia Concentration Reduction Efforts for the MCSD WWMF
November 1, 2011
Page 4

If you have any questions, please call me or Mike Veach at 707-441-8855.

Sincerely,

SHN Consulting Engineers & Geologists, Inc.



J. Rose Patenaude, P.E.
Water Resources Engineer

JRP:lms

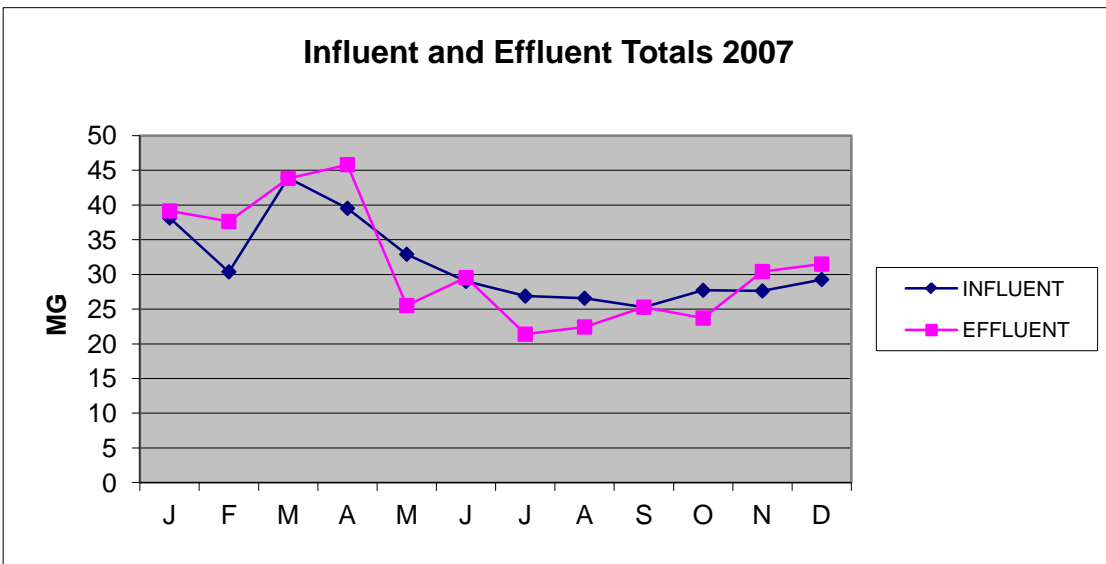
c: Norman Shopay, MCSD
Greg Orsini, MCSD

Reference

United States Department of Agriculture, Natural Resources Conservation Service. (Accessed: September 11, 2009). USDA-NRCS Plants Database. "Wetland Flora: Field Office Illustrated Guide To Plant Species." Accessed at:
http://plants.usda.gov/java/profile?symbol=CEDE4&photoID=c4e4_005_avd.tif.
Washington, D.C.:USDA Natural Resources Conservation Service.

McKinleyville Community Services District
Wastewater Management Facility
Influent and Effluent Flows 2011
in MGD

DATE	INFLUENT	FISCHER	HILLER	EFFLUENT	AVERAGE GPM
J	38.128	19.538	18.590	39.144	756
F	30.372	14.703	15.669	37.622	954
M	43.925	21.329	22.596	43.835	1031
A	39.528	18.971	20.557	45.815	1092
M	32.905	15.192	17.713	25.516	735
J	28.994	13.566	15.428	29.551	931
J	26.883	12.094	14.789	21.394	701
A	26.569	11.754	14.815	22.431	738
S	25.260	11.085	14.175	25.284	825
O	27.719	12.457	15.262	23.710	727
N	27.628	12.371	15.257	30.418	778
D	29.269	14.118	15.151	31.495	793
Total	377.180	177.178	200.002	376.215	
Average	31.432	14.765	16.667	31.351	838
Maximum	43.925	21.329	22.596	45.815	1092
Minimum	25.260	11.085	14.175	21.394	701



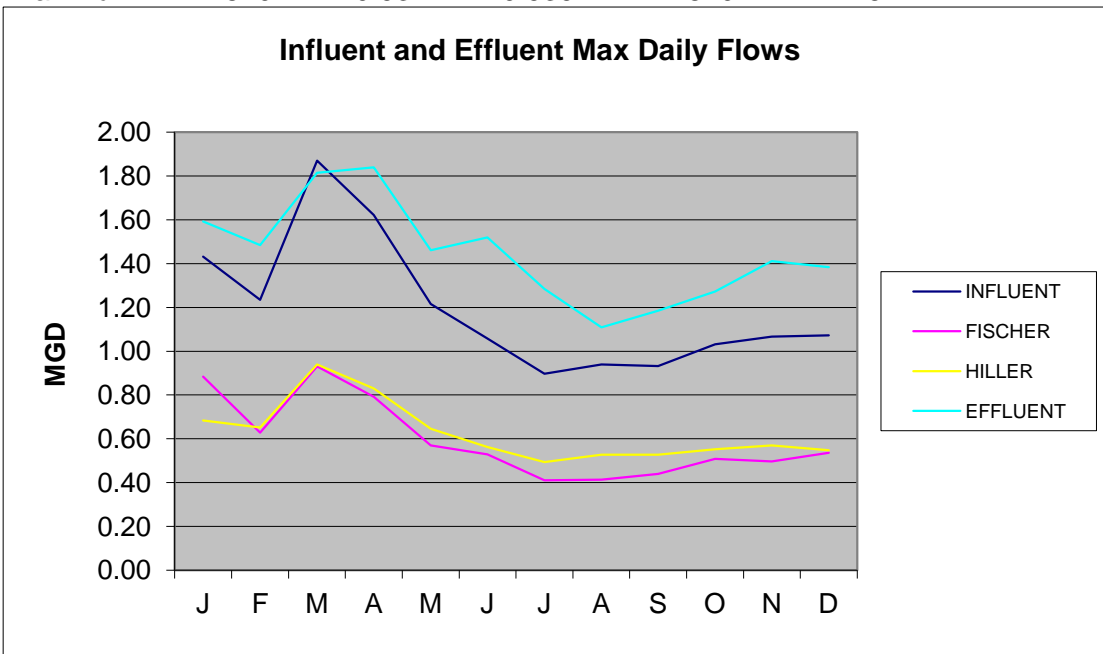
McKinleyville Community Services District
Wastewater Management Facility
Influent and Effluent Max Daily Flows in MGD

2011

DATE	INFLUENT	FISCHER	HILLER	EFFLUENT	MAX GPM
------	----------	---------	--------	----------	---------

J	1.432	0.884	0.684	1.592	1209
F	1.235	0.628	0.652	1.485	1046
M	1.870	0.931	0.939	1.814	1281
A	1.622	0.792	0.830	1.840	1293
M	1.215	0.570	0.645	1.461	1102
J	1.058	0.529	0.562	1.520	1372
J	0.897	0.410	0.494	1.284	1467
A	0.940	0.413	0.527	1.109	1132
S	0.932	0.439	0.527	1.185	1113
O	1.031	0.509	0.552	1.273	1168
N	1.066	0.497	0.569	1.412	1027
D	1.072	0.536	0.548	1.384	1043

Maximum	1.870	0.931	0.939	1.840	1467
---------	-------	-------	-------	-------	------



McKINLEYVILLE COMMUNITY SERVICES DISTRICT
WASTEWATER MANAGEMENT FACILITY

RIVER CFS - EFFLUENT FLOWS -

M-004

RIVER DILUTION

M-005

JANUARY 2011

M-006

DATE	M-INF INFLUENT MGD	M-001 EFFLUENT MGD	EFFLUENT MAXIMUM GPM	M-003 PERK PONDS MGD	M-007 IRRIGATE MGD	M-002 RIVER MGD	RIVER DILUTION 100:1	MAXIMUM G.P.M. DISCHARGE FOR 100:1	RIVER FLOW IN CFS	RIVER FLOW IN GPS
------	--------------------------	--------------------------	----------------------------	-------------------------------	--------------------------	-----------------------	----------------------------	---	-------------------------	-------------------------

1	1.410	1.573	661			1.573	3463	22892	5100	38153
2	1.432	1.58	684			1.580	2362	16159	3600	26932
3	1.341	1.584	641			1.584	1947	12478	2780	20797
4	1.276	1.587	608			1.587	1787	10862	2420	18104
5	1.257	1.591	606			1.591	1585	9606	2140	16009
6	1.230	1.592	602			0.000	1439	8663	1930	14438
7	1.215	1.476	600			1.476	1347	8079	1800	13466
8	1.238	1.351	612			1.351	1247	7631	1700	12718
9	1.279	1.358	644			1.358	1122	7227	1610	12044
10	1.188	1.360	593			1.360	1151	6823	1520	11371
11	1.148	0.934	572			0.934	1130	6464	1440	10773
12	1.148	1.196	560			1.196	1114	6239	1390	10399
13	1.282	1.256	637			1.256	1106	7047	1570	11745
14	1.253	1.318	613			1.318	2680	16428	3660	27380
15	1.274	1.358	627			1.358	2004	12568	2800	20947
16	1.338	1.352	659			1.352	1798	11850	2640	19750
17	1.364	0.989	480			0.989	2562	12299	2740	20498
18	1.263	1.167	1181			1.167	931	10997	2450	18328
19	1.258	1.395	1181			1.395	825	9740	2170	16234
20	1.212	1.077	1141			1.077	775	8843	1970	14738
21	1.180	1.067	758			1.067	1066	8079	1800	13466
22	1.203	1.071	781			1.071	908	7092	1580	11820
23	1.250	1.076	762			1.076	854	6508	1450	10847
24	1.162	0.633	786			0.633	754	5925	1320	9875
25	1.123	0.000	0			0.000	0	5476	1220	9127
26	1.103	0.761	1209			0.761	420	5072	1130	8454
27	1.094	1.469	1034			1.469	460	4758	1060	7930
28	1.089	1.497	1055			1.497	425	4489	1000	7481
29	1.175	1.497	1053			1.497	401	4219	940	7032
30	1.223	1.489	1046			1.489	429	4489	1000	7481
31	1.120	1.49	1045			1.490	404	4219	940	7032

TOTAL	38.128	39.144		0.000	0.000	37.552				
AVERAGE	1.230	1.263	756	0.000	0.000	1.211	1242	8814	1964	14689
MAXIMUM	1.432	1.592	1209	0.000	0.000	1.591	3463	22892	5100	38153
MINIMUM	1.089	0.000	0	0.000	0.000	0.000	0	4219	940	7032
DAYS	31	31	31	0	0					

DAYS WITH NO DISCHARGE TO THE MAD RIVER = 1

McKINLEYVILLE COMMUNITY SERVICES DISTRICT
WASTEWATER MANAGEMENT FACILITY

RIVER CFS - EFFLUENT FLOWS -

M-004

RIVER DILUTION

M-005

FEBRUARY 2011

M-006

DATE	M-INF INFLUENT MGD	M-001 EFFLUENT MGD	EFFLUENT MAXIMUM GPM	M-003 PERK PONDS MGD	M-007 IRRIGATE MGD	M-002 RIVER MGD	RIVER DILUTION 100:1	MAXIMUM G.P.M. DISCHARGE FOR 100:1	RIVER FLOW IN CFS	RIVER FLOW IN GPS
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1	1.079	1.485	1044			1.485	363	3788	844	6314
2	1.054	1.481	1042			1.481	321	3348	746	5581
3	1.015	1.483	1046			1.483	297	3111	693	5184
4	0.996	1.479	1042			1.479	276	2873	640	4788
5	1.041	1.475	1036			1.475	269	2783	620	4638
6	1.082	1.479	1037			0.000	260	2698	601	4496
7	1.005	1.477	1036			1.477	248	2567	572	4279
8	1.004	1.469	1031			1.469	241	2487	554	4144
9	0.998	1.472	1029			1.472	234	2406	536	4010
10	0.980	1.472	1037			1.472	217	2253	502	3755
11	0.970	1.477	1038			1.477	210	2177	485	3628
12	1.013	1.471	1033			1.471	204	2110	470	3516
13	1.050	1.466	1031			1.466	199	2047	456	3411
14	0.985	1.247	1025			1.247	194	1984	442	3307
15	1.128	1.060	753			1.060	433	3259	726	5431
16	1.203	1.047	739			1.047	3122	23071	5140	38452
17	1.235	1.153	879			1.153	1634	14364	3200	23939
18	1.231	1.254	886			1.254	1500	13286	2960	22144
19	1.217	1.257	889			1.257	1262	11222	2500	18703
20	1.170	1.260	888			1.260	1021	9067	2020	15112
21	1.146	1.262	889			1.262	868	7720	1720	12867
22	1.084	1.266	892			1.266	785	7002	1560	11670
23	1.067	1.265	893			1.265	699	6239	1390	10399
24	1.093	1.274	895			1.274	622	5566	1240	9276
25	1.132	1.272	897			1.272	756	6778	1510	11296
26	1.145	1.275	898			1.275	665	5970	1330	9950
27	1.175	1.274	897			1.274	575	5162	1150	8603
28	1.074	1.270	896			1.270	546	4893	1090	8154

TOTAL	30.372	37.622		0.000	0.000	36.143				
AVERAGE	1.085	1.344	954	0.000	0.000	1.291	644	5722	1275	9537
MAXIMUM	1.235	1.485	1046	0.000	0.000	1.485	3122	23071	5140	38452
MINIMUM	0.970	1.047	739	0.000	0.000	0.000	194	1984	442	3307
DAYS	28	28		0	0	28				

DAYS WITH NO DISCHARGE TO THE MAD RIVER = 0

McKINLEYVILLE COMMUNITY SERVICES DISTRICT
WASTEWATER MANAGEMENT FACILITY

RIVER CFS - EFFLUENT FLOWS -

M-004

RIVER DILUTION

M-005

MARCH 2011

M-006

DATE	M-INF INFLUENT MGD	M-001 EFFLUENT MGD	EFFLUENT MAXIMUM GPM	M-003 PERK PONDS MGD	M-007 IRRIGATE MGD	M-002 RIVER MGD	RIVER DILUTION 100:1	MAXIMUM G.P.M. DISCHARGE FOR 100:1	RIVER FLOW IN CFS	RIVER FLOW IN GPS
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1	1.057	1.266	893			1.266	558	4982	1110	8304
2	1.082	1.26	886			1.260	654	5790	1290	9650
3	1.097	1.247	876			1.247	2024	17730	3950	29550
4	1.077	1.245	876			1.245	2101	18403	4100	30672
5	1.195	1.245	875			1.245	1657	14498	3230	24164
6	1.450	1.215	853			0.000	5231	44617	9940	74361
7	1.274	1.229	864			1.229	3818	32991	7350	54985
8	1.304	1.233	872			1.233	3063	26707	5950	44512
9	1.250	1.266	1023			1.266	2536	25944	5780	43240
10	1.296	1.233	870			1.233	2224	19346	4310	32243
11	1.260	1.227	866			1.227	2939	25450	5670	42417
12	1.248	1.238	869			1.238	2107	18313	4080	30522
13	1.248	1.238	907			1.238	1688	15306	3410	25510
14	1.307	1.245	867			1.245	3080	26707	5950	44512
15	1.241	1.232	871			1.232	2355	20513	4570	34188
16	1.411	1.234	851			1.234	6540	55659	12400	92764
17	1.436	1.209	926			1.209	4716	43674	9730	72790
18	1.376	1.281	1000			1.281	3730	37300	8310	62167
19	1.519	1.391	1007			1.391	3985	40128	8940	66880
20	1.617	1.434	1012			1.434	3140	31779	7080	52965
21	1.688	1.443	1255			1.443	2525	31690	7060	52816
22	1.658	1.545	1271			1.545	2274	28907	6440	48178
23	1.471	1.810	1265			1.810	1831	23161	5160	38602
24	1.452	1.806	1259			1.806	2382	29984	6680	49973
25	1.741	1.685	1235			1.685	3300	40756	9080	67927
26	1.839	1.633	1259			1.633	3241	40801	9090	68002
27	1.870	1.796	1268			1.796	2641	33485	7460	55808
28	1.836	1.810	1269			1.810	2639	33485	7460	55808
29	1.685	1.809	1270			1.809	2106	26752	5960	44587
30	1.505	1.814	1278			1.814	1861	23790	5300	39649
31	1.435	1.516	1281			1.516	2081	26662	5940	44437

TOTAL	43.925	43.835		0.000	0.000	42.620				
AVERAGE	1.417	1.414	1031	0.000	0.000	1.375	2743	27913	6219	46522
MAXIMUM	1.870	1.814	1281	0.000	0.000	1.814	6540	55659	12400	92764
MINIMUM	1.057	1.209	851	0.000	0.000	0.000	558	4982	1110	8304
DAYS	31	31		0	0	31				

DAYS WITH NO DISCHARGE TO THE MAD RIVER = 0

APRIL 2011

M-006

RIVER DILUTION

	M-INF	M-001		M-003	M-007	M-002				
DATE	INFLUENT	EFFLUENT	EFFLUENT	PERK	IRRIGATE	RIVER	RIVER	MAXIMUM	RIVER	RIVER
	MGD	MGD	MAXIMUM	PONDS	MGD	MGD	DILUTION	G.P.M.	FLOW IN	FLOW IN
			GPM	MGD			100:1	DISCHARGE	CFS	GPS
								FOR 100:1		

[illegible]

TOTAL	39.528	45.815		0.000	0.000	44.077				
AVERAGE	1.318	1.527	1092	0.000	0.000	1.469	1542	16445	3664	27408
MAXMUM	1.622	1.840	1293	0.000	0.000	1.840	4197	37794	8420	62990
M N MUM	1.150	1.184	831	0.000	0.000	0.000	677	7541	1680	12568
DAYS	30	30		0	0	30				

DAYS WITH NO DISCHARGE TO THE MAD RIVER = 0

McKINLEYVILLE COMMUNITY SERVICES DISTRICT
WASTEWATER MANAGEMENT FACILITY

RIVER CFS - EFFLUENT FLOWS -

M-004

RIVER DILUTION

M-005

M-006

MAY 2011

DATE	M-INF INFLUENT MGD	M-001 EFFLUENT MGD	EFFLUENT MAXIMUM GPM	M-003 PERK PONDS MGD	M-007 IRRIGATE MGD	M-002 RIVER MGD	RIVER DILUTION 100:1	MAXIMUM G.P.M. DISCHARGE FOR 100:1	RIVER FLOW IN CFS	RIVER FLOW IN GPS
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1	1.215	1.461	1034	0.000	0.000	1.461	708	7316	1630	12194
2	1.154	1.454	1022	0.000	0.000	1.454	676	6912	1540	11521
3	1.129	0.814	1029	0.000	0.000	0.814	576	5925	1320	9875
4	1.114	0.000	0	0.000	0.000	0.000	0	5656	1260	9426
5	1.108	0.579	831	0.000	0.000	0.579	713	5925	1320	9875
6	1.091	1.018	832	0.000	0.000	1.018	691	5745	1280	9576
7	1.108	1.190	844	0.000	0.000	1.190	659	5566	1240	9276
8	1.145	1.194	859	0.000	0.000	1.194	664	5701	1270	9501
9	1.120	1.180	829	0.000	0.000	1.180	633	5252	1170	8753
10	1.073	1.176	826	0.000	0.000	1.176	576	4758	1060	7930
11	1.065	1.176	823	0.000	0.000	1.176	556	4578	1020	7631
12	1.074	1.176	883	0.000	0.000	1.176	491	4331	965	7219
13	1.051	1.168	822	0.000	0.000	1.168	513	4219	940	7032
14	1.072	0.538	820	0.134	0.000	0.404	453	3717	828	6194
15	1.160	0.197	142	0.197	0.000	0.000				
16	1.094	0.587	1102	0.068	0.519	0.000				
17	1.046	0.892	887	0.000	0.892	0.000				
18	1.047	0.982	960	0.000	0.982	0.000				
19	1.031	0.883	853	0.000	0.883	0.000				
20	1.002	0.719	829	0.244	0.475	0.000				
21	1.025	0.460	325	0.460	0.000	0.000				
22	1.082	0.459	322	0.459	0.000	0.000				
23	1.011	0.744	896	0.164	0.580	0.000				
24	0.989	0.929	899	0.000	0.929	0.000				
25	1.001	0.750	800	0.000	0.750	0.000				
26	0.997	0.746	893	0.000	0.746	0.000				
27	0.973	0.768	747	0.271	0.497	0.000				
28	0.952	0.513	361	0.513	0.000	0.000				
29	0.956	0.513	362	0.513	0.000	0.000				
30	1.047	0.510	360	0.510	0.000	0.000				
31	0.973	0.74	584	0.194	0.546	0.000				

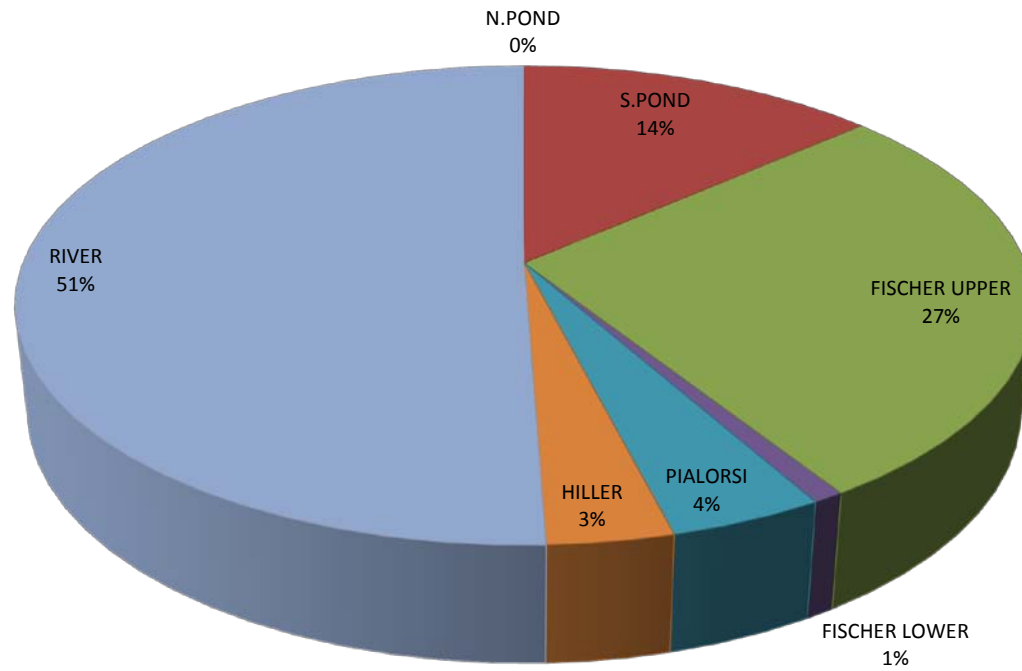
TOTAL	32.905	25.516		3.727	7.799	13.990				
AVERAGE	1.061	0.823	735	0.120	0.252	0.451	565	5400	1203	9000
MAXIMUM	1.215	1.461	1102	0.513	0.982	1.461	713	7316	1630	12194
MINIMUM	0.952	0.000	0	0.000	0.000	0.000	0	3717	828	6194
DAYS	31	30		12	11	13				

DAYS WITH NO DISCHARGE TO THE MAD RIVER = 18

McKINLEYVILLE COMMUNITY SERVICES DISTRICT
WASTEWATER MANAGEMENT FACILITY
EFFLUENT DISCHARGE DISPOSAL TOTALS 2011

Discharge Monitoring DATE	M-INF INFLUENT MGD	M-001 EFFLUENT MGD	002 M-003 N.POND MGD	002 M-003 S.POND MGD	004 M-005 FISCHER MGD UPPER	003 M-004 FISCHER MGD LOWER	006 M-007 PIALORSI MGD	005 M-006 HILLER MGD	IRRIGATE TOTAL MGD	001 M-002 RIVER MGD
JANUARY	38.1	39.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	39.1
FEBRUARY	30.4	37.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	37.6
MARCH	43.9	43.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	43.8
APRIL	39.5	45.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	45.8
MAY	32.9	25.5	0.0	3.7	6.6	0.0	1.2	0.0	7.8	13.99
JUNE	29.0	29.6	0.0	5.6	18.3	0.1	2.7	2.8	24.0	0.0
JULY	26.9	21.4	0.0	7.1	9.4	1.0	1.8	2.1	14.3	0.0
AUGUST	26.6	22.4	0.0	3.9	12.8	1.7	3.7	0.3	18.6	0.0
SEPTEMBER	25.3	25.3	0.0	6.3	14.1	0.4	3.2	1.3	19.0	0.0
OCTOBER	27.7	23.7	0.0	7.6	12.6	0.0	1.8	1.6	16.1	0.0
NOVEMBER	27.6	30.4	0.0	6.2	11.3	0.0	1.2	1.9	14.4	9.9
DECEMBER	29.3	31.5	0.0	10.5	18.2	0.0	0.0	2.8	21.0	0.0
Totals	377.2	376.2	0.0	50.9	103.2	3.2	15.7	12.8	135.0	190.3

Effluent Distribution



McKINLEYVILLE COMMUNITY SERVICES DISTRICT WASTEWATER MANAGEMENT FACILITY EFFLUENT DISCHARGE DISPOSAL

JANUARY 2011

	M-INF	M-001		002	002	004	003	006	005		001
DATE	INFLUENT MGD	EFFLUENT MGD	MAXIMUM GPM	N.POND MGD	S.POND MGD	FISCHER MGD UPPER	FISCHER MGD LOWER	PIALORSI MGD	HILLER MGD	IRRGATE TOTAL MGD	RIVER MGD
1	1.410	1.573	661							0.000	1.573
2	1.432	1.580	684							0.000	1.580
3	1.341	1.584	641							0.000	1.584
4	1.276	1.587	608							0.000	1.587
5	1.257	1.591	606							0.000	1.591
6	1.230	1.592	602							0.000	1.592
7	1.215	1.476	600							0.000	1.476
8	1.238	1.351	612							0.000	1.351
9	1.279	1.358	644							0.000	1.358
10	1.188	1.360	593							0.000	1.360
11	1.148	0.934	572							0.000	0.934
12	1.148	1.196	560							0.000	1.196
13	1.282	1.256	637							0.000	1.256
14	1.253	1.318	613							0.000	1.318
15	1.274	1.358	627							0.000	1.358
16	1.338	1.352	659							0.000	1.352
17	1.364	0.989	480							0.000	0.989
18	1.263	1.167	1181							0.000	1.167
19	1.258	1.395	1181							0.000	1.395
20	1.212	1.077	1141							0.000	1.077
21	1.180	1.067	758							0.000	1.067
22	1.203	1.071	781							0.000	1.071
23	1.250	1.076	762							0.000	1.076
24	1.162	0.633	786							0.000	0.633
25	1.123	0.000	0							0.000	0.000
26	1.103	0.761	1209							0.000	0.761
27	1.094	1.469	1034							0.000	1.469
28	1.089	1.497	1055							0.000	1.497
29	1.175	1.497	1053							0.000	1.497
30	1.223	1.489	1046							0.000	1.489
31	1.120	1.490	1045							0.000	1.490
TOTAL	38.128	39.144		0.000	0.000	0.000	0.000	0.000	0.000	0.000	39.144
AVERAGE	1.230	1.263	756	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.263
MAXIMUM	1.432	1.592	1209	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.592
MINIMUM	1.089	0.000	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
DAYS	31	30		0	0	0	0	0	0	0	30

McKINLEYVILLE COMMUNITY SERVICES DISTRICT
WASTEWATER MANAGEMENT FACILITY
EFFLUENT DISCHARGE DISPOSAL

FEBRUARY 2011

M-INF		M-001	002		002	004	003	006	005	001	
DATE	INFLUENT MGD	EFFLUENT MGD	MAXIMUM GPM	N.POND MGD	S.POND MGD	FISCHER MGD UPPER	FISCHER MGD LOWER	PIALORSI MGD	HILLER MGD	IRRGATE TOTAL MGD	RIVER MGD
1	1.079	1.485	1044							0.000	1.485
2	1.054	1.481	1042							0.000	1.481
3	1.015	1.483	1046							0.000	1.483
4	0.996	1.479	1042							0.000	1.479
5	1.041	1.475	1036							0.000	1.475
6	1.082	1.479	1037							0.000	1.479
7	1.005	1.477	1036							0.000	1.477
8	1.004	1.469	1031							0.000	1.469
9	0.998	1.472	1029							0.000	1.472
10	0.980	1.472	1037							0.000	1.472
11	0.970	1.477	1038							0.000	1.477
12	1.013	1.471	1033							0.000	1.471
13	1.050	1.466	1031							0.000	1.466
14	0.985	1.247	1025							0.000	1.247
15	1.128	1.060	753							0.000	1.060
16	1.203	1.047	739							0.000	1.047
17	1.235	1.153	879							0.000	1.153
18	1.231	1.254	886							0.000	1.254
19	1.217	1.257	889							0.000	1.257
20	1.170	1.260	888							0.000	1.260
21	1.146	1.262	889							0.000	1.262
22	1.084	1.266	892							0.000	1.266
23	1.067	1.265	893							0.000	1.265
24	1.093	1.274	895							0.000	1.274
25	1.132	1.272	897							0.000	1.272
26	1.145	1.275	898							0.000	1.275
27	1.175	1.274	897							0.000	1.274
28	1.074	1.270	896							0.000	1.270
TOTAL	30.372	37.622		0.000	0.000	0.000	0.000	0.000	0.000	0.000	37.622
AVERAGE	1.085	1.344	954	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.344
MAXIMUM	1.235	1.485	1046	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.485
MINIMUM	0.970	1.047	739	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.047
DAYS	28	28		0	0	0	0	0	0	0	28
DAYS WITH NO DISCHARGE = 0											

McKINLEYVILLE COMMUNITY SERVICES DISTRICT WASTEWATER MANAGEMENT FACILITY EFFLUENT DISCHARGE DISPOSAL

MARCH 2011

	M-INF	M-001		002	002	004	003	006	005		001
DATE	INFLUENT MGD	EFFLUENT MGD	MAXIMUM GPM	N.POND MGD	S.POND MGD	FISCHER MGD UPPER	FISCHER MGD LOWER	PIALORSI MGD	HILLER MGD	IRRGATE TOTAL MGD	RIVER MGD
1	1.057	1.266	893							0.000	1.266
2	1.082	1.260	886							0.000	1.260
3	1.097	1.247	876							0.000	1.247
4	1.077	1.245	876							0.000	1.245
5	1.195	1.245	875							0.000	1.245
6	1.450	1.215	853							0.000	1.215
7	1.274	1.229	864							0.000	1.229
8	1.304	1.233	872							0.000	1.233
9	1.250	1.266	1023							0.000	1.266
10	1.296	1.233	870							0.000	1.233
11	1.260	1.227	866							0.000	1.227
12	1.248	1.238	869							0.000	1.238
13	1.248	1.238	907							0.000	1.238
14	1.307	1.245	867							0.000	1.245
15	1.241	1.232	871							0.000	1.232
16	1.411	1.234	851							0.000	1.234
17	1.436	1.209	926							0.000	1.209
18	1.376	1.281	1000							0.000	1.281
19	1.519	1.391	1007							0.000	1.391
20	1.617	1.434	1012							0.000	1.434
21	1.688	1.443	1255							0.000	1.443
22	1.658	1.545	1271							0.000	1.545
23	1.471	1.810	1265							0.000	1.810
24	1.452	1.806	1259							0.000	1.806
25	1.741	1.685	1235							0.000	1.685
26	1.839	1.633	1259							0.000	1.633
27	1.870	1.796	1268							0.000	1.796
28	1.836	1.810	1269							0.000	1.810
29	1.685	1.809	1270							0.000	1.809
30	1.505	1.814	1278							0.000	1.814
31	1.435	1.516	1281							0.000	1.516
TOTAL	43.925	43.835		0.000	0.000	0.000	0.000	0.000	0.000	0.000	43.835
AVERAGE	1.417	1.414	1031	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.414
MAXIMUM	1.870	1.814	1281	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.814
MINIMUM	1.057	1.209	851	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.209
DAYS	31	31		0	0	0	0	0	0	0	31

McKINLEYVILLE COMMUNITY SERVICES DISTRICT WASTEWATER MANAGEMENT FACILITY EFFLUENT DISCHARGE DISPOSAL

APRIL 2011

M-INF		M-001	002		002	004	003	006	005	001	
DATE	INFLUENT MGD	EFFLUENT MGD	MAXIMUM GPM	N.POND MGD	S.POND MGD	FISCHER MGD UPPER	FISCHER MGD LOWER	PIALORSI MGD	HILLER MGD	IRRGATE TOTAL MGD	RIVER MGD
1	1.400	1.526	1244							0.000	1.526
2	1.405	1.816	1281							0.000	1.816
3	1.420	1.836	1288							0.000	1.836
4	1.380	1.836	1293							0.000	1.836
5	1.282	1.840	1293							0.000	1.840
6	1.289	1.738	1281							0.000	1.738
7	1.289	1.662	1179							0.000	1.662
8	1.272	1.623	1139							0.000	1.623
9	1.290	1.621	1148							0.000	1.621
10	1.324	1.621	1138							0.000	1.621
11	1.246	1.619	1133							0.000	1.619
12	1.203	1.626	1137							0.000	1.626
13	1.206	1.628	1147							0.000	1.628
14	1.165	1.473	1140							0.000	1.473
15	1.339	1.213	854							0.000	1.213
16	1.441	1.184	831							0.000	1.184
17	1.622	1.191	833							0.000	1.191
18	1.615	1.191	1006							0.000	1.191
19	1.437	1.451	1019							0.000	1.451
20	1.395	1.459	1025							0.000	1.459
21	1.349	1.466	1032							0.000	1.466
22	1.362	1.466	1031							0.000	1.466
23	1.311	1.464	1027							0.000	1.464
24	1.309	1.471	1078							0.000	1.471
25	1.265	1.463	1025							0.000	1.463
26	1.224	1.461	1028							0.000	1.461
27	1.195	1.465	1031							0.000	1.465
28	1.176	1.474	1032							0.000	1.474
29	1.150	1.470	1037							0.000	1.470
30	1.167	1.461	1027							0.000	1.461
TOTAL	39.528	45.815		0.000	0.000	0.000	0.000	0.000	0.000	0.000	45.815
AVERAGE	1.318	1.527	1092	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.527
MAXIMUM	1.622	1.840	1293	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.840
MINIMUM	1.150	1.184	831	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.184
DAYS	30	30		0	0	0	0	0	0	0	30
DAYS WITH NO DISCHARGE = 0											

MAY 2011

DAYS WITH NO DISCHARGE = 01

JUNE 2011

Discharge Monitoring				002	002	004	003	006	005			001
	M-INF	M-001		M-003	M-003	M-005	M-004	M-007	M-006			M-002
	DATE	INFLUENT MGD	EFFLUENT MGD	MAXIMUM GPM	N.POND MGD	S.POND MGD	FISCHER MGD UPPER	FISCHER MGD LOWER	PIALORSI MGD	HILLER MGD	IRRGATE TOTAL MGD	RIVER MGD
1	0.968	1.297	574			0.961		0.288	0.048	1.297	0.000	
2	0.978	1.217	1125			0.956		0.144	0.117	1.217	0.000	
3	0.966	0.966	1125		0.215	0.497		0.171	0.083	0.751	0.000	
4	0.960	0.412	292		0.412					0.000	0.000	
5	1.037	0.416	293		0.416					0.000	0.000	
6	0.989	0.861	1159		0.158	0.482		0.144	0.077	0.703	0.000	
7	0.948	1.348	1175			0.857		0.351	0.140	1.348	0.000	
8	0.969	1.319	1175			0.947		0.212	0.160	1.319	0.000	
9	0.943	1.337	1316			1.075		0.096	0.166	1.337	0.000	
10	0.934	1.206	1321		0.293	0.678		0.138	0.097	0.913	0.000	
11	0.946	0.555	391		0.555					0.000	0.000	
12	0.975	0.547	386		0.547					0.000	0.000	
13	0.952	1.016	1347		0.208	0.583		0.135	0.090	0.808	0.000	
14	0.927	1.515	1372			1.119		0.231	0.165	1.515	0.000	
15	0.930	1.507	1279			1.233		0.094	0.180	1.507	0.000	
16	0.926	1.480	1279			1.214		0.092	0.174	1.480	0.000	
17	0.923	1.091	1219		0.203	0.791			0.097	0.888	0.000	
18	0.901	0.378	270		0.378					0.000	0.000	
19	0.924	0.381	267		0.381					0.000	0.000	
20	0.942	0.839	1222		0.140	0.482		0.125	0.092	0.699	0.000	
21	0.894	0.725	1202			0.627			0.098	0.725	0.000	
22	1.022	1.128	1027			0.845		0.115	0.168	1.128	0.000	
23	0.990	1.105	982			0.862		0.087	0.156	1.105	0.000	
24	0.974	0.920	960		0.310	0.520			0.090	0.610	0.000	
25	0.974	0.556	413		0.556					0.000	0.000	
26	1.032	0.585	413		0.585					0.000	0.000	
27	1.000	0.896	1042		0.223	0.473		0.110	0.090	0.673	0.000	
28	1.058	1.208	1042			0.967		0.087	0.154	1.208	0.000	
29	1.034	1.220	1071			1.016	0.048		0.156	1.220	0.000	
30	0.978	1.520	1196			1.140	0.090	0.114	0.176	1.520	0.000	
TOTAL	28.994	29.551		0.000	5.580	18.325	0.138	2.734	2.774	23.971	0.000	
AVERAGE	0.966	0.985	931	0.000	0.349	0.833	0.069	0.152	0.126	0.799	0.000	
MAXIMUM	1.058	1.520	1372	0.000	0.585	1.233	0.090	0.351	0.180	1.520	0.000	
MINIMUM	0.894	0.378	267	0.000	0.140	0.473	0.048	0.087	0.048	0.000	0.000	
DAYS	30	30		0	16	22	2	18	22	22	30	
DAYS WITH NO DISCHARGE = 0												

McKINLEYVILLE COMMUNITY SERVICES DISTRICT WASTEWATER MANAGEMENT FACILITY EFFLUENT DISCHARGE DISPOSAL

JULY 2011

	M-INF	M-001		002	002	004	003	006	005		001
DATE	INFLUENT MGD	EFFLUENT MGD	MAXIMUM GPM	N.POND MGD	S.POND MGD	FISCHER MGD UPPER	FISCHER MGD LOWER	PIALORSI MGD	HILLER MGD	IRRGATE TOTAL MGD	RIVER MGD
1	0.896	0.717	1040		0.158	0.204		0.043	0.312	0.559	0.000
2	0.862	0.507	441		0.507					0.000	0.000
3	0.857	0.191	171		0.191					0.000	0.000
4	0.874	0.221	199		0.221					0.000	0.000
5	0.883	0.701	1102		0.156	0.360	0.045	0.081	0.059	0.545	0.000
6	0.888	1.284	1132			0.885	0.051	0.192	0.156	1.284	0.000
7	0.880	1.088	1467			0.837		0.089	0.162	1.088	0.000
8	0.871	0.464	408		0.365	0.084			0.015	0.099	0.000
9	0.869	0.465	330		0.465					0.000	0.000
10	0.897	0.455	323		0.455					0.000	0.000
11	0.885	0.636	853		0.203	0.303	0.048	0.082		0.433	0.000
12	0.880	0.948	855			0.656	0.051	0.163	0.078	0.948	0.000
13	0.872	0.888	821			0.555		0.171	0.162	0.888	0.000
14	0.872	0.580	671			0.433		0.026	0.121	0.580	0.000
15	0.850	0.614	647		0.285	0.250	0.079			0.329	0.000
16	0.836	0.510	365		0.510					0.000	0.000
17	0.884	0.502	361		0.502					0.000	0.000
18	0.859	0.785	1043		0.190	0.290	0.127	0.112	0.066	0.595	0.000
19	0.863	1.159	1011			0.686	0.151	0.178	0.144	1.159	0.000
20	0.860	1.065	1016			0.713	0.101	0.095	0.156	1.065	0.000
21	0.860	1.005	954			0.677	0.092	0.086	0.150	1.005	0.000
22	0.841	0.845	857		0.372	0.308		0.097	0.068	0.473	0.000
23	0.843	0.722	516		0.722					0.000	0.000
24	0.875	0.714	509		0.714					0.000	0.000
25	0.863	0.804	1004		0.275	0.307	0.132		0.090	0.529	0.000
26	0.870	1.125	912			0.774	0.110	0.081	0.160	1.125	0.000
27	0.868	1.060	913			0.693		0.213	0.154	1.060	0.000
28	0.852	0.636	912		0.115	0.341		0.122	0.058	0.521	0.000
29	0.854	0.273	583		0.273					0.000	0.000
30	0.841	0.208	160		0.208					0.000	0.000
31	0.878	0.222	165		0.222					0.000	0.000
TOTAL	26.883	21.394		0.000	7.109	9.356	0.987	1.831	2.111	14.285	0.000
AVERAGE	0.867	0.690	701	0.000	0.339	0.492	0.090	0.114	0.124	0.461	0.000
MAXIMUM	0.897	1.284	1467	0.000	0.722	0.885	0.151	0.213	0.312	1.284	0.000
MINIMUM	0.836	0.191	160	0.000	0.115	0.084	0.045	0.026	0.015	0.000	0.000
DAYS	31	31		0	21	19	11	16	17	19	

McKINLEYVILLE COMMUNITY SERVICES DISTRICT WASTEWATER MANAGEMENT FACILITY EFFLUENT DISCHARGE DISPOSAL

AUGUST 2011

Discharge Monitoring				002	002	004	003	006	005			001
	M-INF	M-001		M-003	M-003	M-005	M-004	M-007	M-006			M-002
	DATE	INFLUENT MGD	EFFLUENT MGD	MAXIMUM GPM	N.POND MGD	S.POND MGD	FISCHER MGD UPPER	FISCHER MGD LOWER	PIALORSI MGD	HILLER MGD	IRRGATE TOTAL MGD	RIVER MGD
1	0.878	0.794	794		0.089	0.583	0.048		0.074	0.705	0.000	
2	0.849	0.920	920			0.751	0.050	0.119		0.920	0.000	
3	0.855	0.841	841			0.641		0.173	0.027	0.841	0.000	
4	0.849	0.929	929			0.674	0.058	0.171	0.026	0.929	0.000	
5	0.852	0.876	876		0.181	0.481	0.070	0.124	0.020	0.695	0.000	
6	0.833	0.241	241		0.241					0.000	0.000	
7	0.868	0.266	266		0.266					0.000	0.000	
8	0.852	0.757	1109		0.144	0.408	0.068	0.116	0.021	0.613	0.000	
9	0.841	1.062	1018			0.743	0.096	0.200	0.023	1.062	0.000	
10	0.851	0.982	952			0.663	0.114	0.205		0.982	0.000	
11	0.837	0.904	886			0.623	0.051	0.208	0.022	0.904	0.000	
12	0.830	0.728	902		0.230	0.363		0.119	0.016	0.498	0.000	
13	0.833	0.416	295		0.416					0.000	0.000	
14	0.873	0.421	298		0.421					0.000	0.000	
15	0.866	0.819	1132		0.156	0.448	0.066	0.125	0.024	0.663	0.000	
16	0.852	1.109	1066			0.765	0.099	0.222	0.023	1.109	0.000	
17	0.860	0.907	821			0.559	0.129	0.219		0.907	0.000	
18	0.862	0.910	826			0.591	0.118	0.201		0.910	0.000	
19	0.866	0.692	827		0.157	0.356	0.051	0.128		0.535	0.000	
20	0.837	0.294	209		0.294					0.000	0.000	
21	0.890	0.296	210		0.296					0.000	0.000	
22	0.862	0.633	900		0.113	0.330	0.071	0.119		0.520	0.000	
23	0.860	0.979	810			0.653	0.132	0.194		0.979	0.000	
24	0.854	0.872	780			0.528	0.134	0.210		0.872	0.000	
25	0.843	0.899	840			0.556	0.138	0.205		0.899	0.000	
26	0.833	0.741	853		0.160	0.374	0.076	0.131		0.581	0.000	
27	0.878	0.301	213		0.301					0.000	0.000	
28	0.940	0.306	216		0.306					0.000	0.000	
29	0.860	0.655	941		0.110	0.353	0.073	0.119		0.545	0.000	
30	0.851	0.976	987			0.704	0.054	0.199	0.019	0.976	0.000	
31	0.854	0.905	906			0.651		0.228	0.026	0.905	0.000	
TOTAL	26.569	22.431		0.000	3.881	12.798	1.696	3.735	0.321	18.550	0.000	
AVERAGE	0.857	0.724	738	0.000	0.228	0.556	0.085	0.170	0.027	0.598	0.000	
MAXIMUM	0.940	1.109	1132	0.000	0.421	0.765	0.138	0.228	0.074	1.109	0.000	
MINIMUM	0.830	0.241	209	0.000	0.089	0.330	0.048	0.116	0.016	0.000	0.000	
DAYS	31	31			17	23	20	22	12	23	0	

McKINLEYVILLE COMMUNITY SERVICES DISTRICT WASTEWATER MANAGEMENT FACILITY EFFLUENT DISCHARGE DISPOSAL

SEPTEMBER 2011

Discharge Monitoring	M-INF	M-001		002 M-003	002 M-003	004 M-005	003 M-004	006 M-007	005 M-006		001 M-002	
	DATE	INFLUENT MGD	EFFLUENT MGD	MAXIMUM GPM	N.POND MGD	S.POND MGD	FISCHER MGD UPPER	FISCHER MGD LOWER	PIALORSI MGD	HILLER MGD	IRRGATE TOTAL MGD	RIVER MGD
	1	0.840	0.909	911			0.650		0.237	0.022	0.909	0.000
	2	0.827	0.733	995		0.193	0.390		0.132	0.018	0.540	0.000
	3	0.804	0.348	247		0.348					0.000	0.000
	4	0.799	0.355	249		0.355					0.000	0.000
	5	0.932	0.361	256		0.361					0.000	0.000
	6	0.839	0.799	1076		0.138	0.407	0.048	0.116	0.090	0.661	0.000
	7	0.852	1.185	1081			0.758	0.054	0.205	0.168	1.185	0.000
	8	0.830	1.092	929			0.717		0.211	0.164	1.092	0.000
	9	0.835	0.844	941		0.227	0.411		0.114	0.092	0.617	0.000
	10	0.854	0.414	291		0.414					0.000	0.000
	11	0.905	0.415	291		0.415					0.000	0.000
	12	0.850	0.737	948		0.157	0.322	0.049	0.120	0.089	0.580	0.000
	13	0.829	1.063	962			0.703	0.051	0.214	0.095	1.063	0.000
	14	0.847	1.110	1037			0.725		0.219	0.166	1.110	0.000
	15	0.831	1.185	1096			0.825		0.205	0.155	1.185	0.000
	16	0.828	0.995	1079		0.339	0.508		0.129	0.019	0.656	0.000
	17	0.845	0.618	435		0.618					0.000	0.000
	18	0.893	0.617	433		0.617					0.000	0.000
	19	0.856	0.932	1069		0.234	0.514	0.050	0.113	0.021	0.698	0.000
	20	0.823	1.174	1048			0.896	0.053	0.225		1.174	0.000
	21	0.840	1.143	1071			0.880		0.234	0.029	1.143	0.000
	22	0.823	1.139	931			0.891		0.223	0.025	1.139	0.000
	23	0.798	0.964	1089		0.302	0.516		0.125	0.021	0.662	0.000
	24	0.823	0.552	387		0.552					0.000	0.000
	25	0.924	0.557	391		0.557					0.000	0.000
	26	0.847	0.833	1103		0.211	0.427	0.049	0.123	0.023	0.622	0.000
	27	0.844	1.175	1113			0.905	0.054	0.124	0.092	1.175	0.000
	28	0.818	1.071	1111			0.999		0.043	0.029	1.071	0.000
	29	0.817	1.065	1109			0.993		0.041	0.031	1.065	0.000
	30	0.807	0.899	1078		0.261	0.614		0.024		0.638	0.000
TOTAL	25.260	25.284		0.000	6.299	14.051	0.408	3.177	1.349	18.985	0.000	
AVERAGE	0.842	0.843	825	0.000	0.350	0.669	0.051	0.151	0.071	0.633	0.000	
MAXIMUM	0.932	1.185	1113	0.000	0.618	0.999	0.054	0.237	0.168	1.185	0.000	
MINIMUM	0.798	0.348	247	0.000	0.138	0.322	0.048	0.024	0.018	0.000	0.000	
DAYS	30	30		0	18	21	8	21	19	21	0	
DAYS WITH NO DISCHARGE = 0												

**McKINLEYVILLE COMMUNITY SERVICES DISTRICT
WASTEWATER MANAGEMENT FACILITY
EFFLUENT DISCHARGE DISPOSAL**

OCTOBER 2011

Discharge Monitoring	M-INF	M-001		002 M-003	002 M-003	004 M-005	003 M-004	006 M-007	005 M-006		001 M-002
DATE	INFLUENT MGD	EFFLUENT MGD	MAXIMUM GPM	N.POND MGD	S.POND MGD	FISCHER MGD UPPER	FISCHER MGD LOWER	PIALORSI MGD	HILLER MGD	IRRGATE TOTAL MGD	RIVER MGD
1	0.845	0.529	371		0.529					0.000	0.000
2	0.914	0.523	366		0.523					0.000	0.000
3	0.909	0.633	817		0.198	0.435				0.435	0.000
4	0.914	0.866	945			0.866				0.866	0.000
5	0.917	0.783	695			0.783				0.783	0.000
6	0.951	0.872	902			0.872				0.872	0.000
7	0.859	0.852	1007		0.242	0.610				0.610	0.000
8	0.873	0.427	310		0.427					0.000	0.000
9	0.929	0.421	297		0.421					0.000	0.000
10	1.002	0.434	311		0.434					0.000	0.000
11	0.911	0.798	999		0.168	0.558		0.072		0.630	0.000
12	0.886	1.242	1122			1.023		0.160	0.059	1.242	0.000
13	0.868	1.273	1125			1.045		0.086	0.142	1.273	0.000
14	0.828	0.918	1093		0.267	0.552			0.099	0.651	0.000
15	0.872	0.461	342		0.461					0.000	0.000
16	0.914	0.513	372		0.513					0.000	0.000
17	0.865	0.907	1167		0.223	0.516		0.090	0.078	0.684	0.000
18	0.859	0.792	1168			0.592		0.103	0.097	0.792	0.000
19	0.854	0.000	0							0.000	0.000
20	0.848	0.754	1138			0.549		0.106	0.099	0.754	0.000
21	0.829	1.039	1139		0.279	0.569		0.102	0.089	0.760	0.000
22	0.871	0.508	358		0.508					0.000	0.000
23	0.926	0.518	370		0.518					0.000	0.000
24	0.870	0.946	931		0.189	0.403		0.214	0.140	0.757	0.000
25	0.843	1.142	803			0.742		0.207	0.193	1.142	0.000
26	0.848	1.163	823			0.750		0.211	0.202	1.163	0.000
27	0.841	1.145	820			0.727		0.209	0.209	1.145	0.000
28	0.896	0.921	870		0.320	0.317		0.162	0.122	0.601	0.000
29	1.012	0.604	426		0.604					0.000	0.000
30	1.031	0.598	420		0.598					0.000	0.000
31	0.934	1.128	1030		0.221	0.674		0.114	0.119	0.907	0.000
TOTAL	27.719	23.710		0.000	7.643	12.583	0.000	1.836	1.648	16.067	0.000
AVERAGE	0.894	0.765	727	0.000	0.382	0.662	0.000	0.141	0.127	0.518	0.000
MAXIMUM	1.031	1.273	1168	0.000	0.604	1.045	0.000	0.214	0.209	1.273	0.000
MINIMUM	0.828	0.000	0	0.000	0.168	0.317	0.000	0.072	0.059	0.000	0.000
DAYS	31	30		0	20	19	0	13	13	19	0

DAYS WITH NO DISCHARGE = 1

McKINLEYVILLE COMMUNITY SERVICES DISTRICT
WASTEWATER MANAGEMENT FACILITY
EFFLUENT DISCHARGE DISPOSAL

NOVEMBER 2011

Discharge Monitoring				002	002	004	003	006	005			001
	M-INF	M-001		M-003	M-003	M-005	M-004	M-007	M-006			M-002
	DATE	INFLUENT MGD	EFFLUENT MGD	MAXIMUM GPM	N.POND MGD	S.POND MGD	FISCHER MGD UPPER	FISCHER MGD LOWER	PIALORSI MGD	HILLER MGD	IRRGATE TOTAL MGD	RIVER MGD
1	0.930	1.412	1027			1.054		0.207	0.151	1.412	0.000	
2	0.905	1.384	986			1.014		0.214	0.156	1.384	0.000	
3	0.933	1.305	993			1.051		0.089	0.165	1.305	0.000	
4	0.910	1.000	957		0.319	0.602			0.079	0.681	0.000	
5	0.954	0.581	409		0.581					0.000	0.000	
6	1.066	0.575	404		0.575					0.000	0.000	
7	0.942	1.039	963		0.206			0.723	0.110	0.833	0.000	
8	0.901	1.354	965			1.181			0.173	1.354	0.000	
9	0.896	1.370	972			1.194			0.176	1.370	0.000	
10	0.874	1.066	973		0.316	0.654			0.096	0.750	0.000	
11	0.887	0.636	448		0.636					0.000	0.000	
12	0.880	0.627	442		0.627					0.000	0.000	
13	0.935	0.624	437		0.624					0.000	0.000	
14	0.881	1.036	950		0.243	0.680			0.113	0.793	0.000	
15	0.853	1.331	952			1.145			0.186	1.331	0.000	
16	0.875	1.314	943			1.125			0.189	1.314	0.000	
17	0.885	1.268	903			1.081			0.187	1.268	0.000	
18	0.898	1.033	929		0.444	0.503			0.086	0.589	0.000	
19	0.951	0.805	569		0.805					0.000	0.000	
20	0.947	0.795	558		0.795					0.000	0.000	
21	0.895	1.073	905		0.301	0.668			0.104	0.772	0.000	
22	0.895	1.303	921			1.137			0.166	1.303	0.000	
23	0.995	1.026	957		0.369	0.578			0.079	0.657	0.000	
24	1.016	0.670	473		0.670					0.000	0.000	
25	0.888	0.665	466		0.665					0.000	0.000	
26	0.914	0.664	468		0.664					0.000	0.000	
27	0.974	0.662	463		0.662					0.000	0.000	
28	0.932	1.108	951		0.257	0.740			0.111	0.851	0.000	
29	0.921	1.337	952			1.157			0.180	1.337	0.000	
30	0.895	1.355	996			1.170			0.185	1.355	0.000	
TOTAL	27.628	30.418		0.000	9.759	16.734	0.000	1.233	2.692	20.659	0.000	
AVERAGE	0.921	1.014	778	0.000	0.514	0.930	0.000	0.308	0.142	0.689	0.000	
MAXIMUM	1.066	1.412	1027	0.000	0.805	1.194	0.000	0.723	0.189	1.412	0.000	
MINIMUM	0.853	0.575	404	0.000	0.206	0.503	0.000	0.089	0.079	0.000	0.000	
DAYS	30	30		0	19	18	0	4	19	19	0	

DAYS WITH NO DISCHARGE = 0

McKINLEYVILLE COMMUNITY SERVICES DISTRICT
WASTEWATER MANAGEMENT FACILITY
EFFLUENT DISCHARGE DISPOSAL

DECEMBER 2011

Discharge Monitoring				002	002	004	003	006	005		001
	M-INF	M-001		M-003	M-003	M-005	M-004	M-007	M-006		M-002
	DATE	INFLUENT MGD	EFFLUENT MGD	MAXIMUM GPM	N.POND MGD	S.POND MGD	FISCHER MGD UPPER	FISCHER MGD LOWER	PIALORSI MGD	HILLER MGD	IRRGATE TOTAL MGD
1	0.866	1.339	960			1.160			0.179	1.339	0.000
2	0.851	0.927	1007		0.271	0.577			0.079	0.656	0.000
3	0.909	0.592	430		0.592					0.000	0.000
4	0.949	0.637	462		0.637					0.000	0.000
5	0.882	1.087	940		0.249	0.731			0.107	0.838	0.000
6	0.860	1.352	964			1.175			0.177	1.352	0.000
7	0.869	1.347	929			1.164			0.183	1.347	0.000
8	0.867	1.362	974			1.182			0.180	1.362	0.000
9	0.842	0.966	977		0.361	0.522			0.083	0.605	0.000
10	1.000	0.686	481		0.686					0.000	0.000
11	1.072	0.684	481		0.684					0.000	0.000
12	1.012	1.049	930		0.281	0.674			0.094	0.768	0.000
13	0.974	1.357	963			1.194			0.163	1.357	0.000
14	0.982	1.348	963			1.171			0.177	1.348	0.000
15	0.986	1.353	962			1.173			0.180	1.353	0.000
16	0.742	0.971	963		0.294	0.587			0.090	0.677	0.000
17	0.968	0.582	409		0.582					0.000	0.000
18	1.008	0.583	410		0.583					0.000	0.000
19	0.980	1.039	954		0.221	0.710			0.108	0.818	0.000
20	0.962	1.384	980			1.208			0.176	1.384	0.000
21	0.952	1.332	984			1.151			0.181	1.332	0.000
22	0.864	1.026	1043		0.452	0.485			0.089	0.574	0.000
23	0.956	0.881	615		0.881					0.000	0.000
24	1.014	0.882	618		0.882					0.000	0.000
25	0.926	0.884	617		0.884					0.000	0.000
26	1.002	0.883	618		0.883					0.000	0.000
27	0.974	1.117	897		0.333	0.681			0.103	0.784	0.000
28	0.966	1.309	929			1.138			0.171	1.309	0.000
29	0.953	1.296	925			1.119			0.177	1.296	0.000
30	1.064	0.782	889		0.282	0.430			0.070	0.500	0.000
31	1.017	0.458	324		0.458					0.000	0.000
TOTAL	29.269	31.495		0.000	10.496	18.232	0.000	0.000	2.767	20.999	0.000
AVERAGE	0.944	1.016	793	0.000	0.525	0.912	0.000	0.000	0.138	0.677	0.000
MAXIMUM	1.072	1.384	1043	0.000	0.884	1.208	0.000	0.000	0.183	1.384	0.000
MINIMUM	0.742	0.458	324	0.000	0.221	0.430	0.000	0.000	0.070	0.000	0.000
DAYS	31	31		0	20	20	0	0	20	21	0

DAYS WITH NO DISCHARGE = 0

McKINLEYVILLE COMMUNITY SERVICES DISTRICT
WASTEWATER MANAGEMENT FACILITY
MONITORING DATA

MONTH: JANUARY

YEAR: 2011

DATE	INFLUENT FLOW	EFFLUENT FLOW	EFFLUENT MAXIMUM	RIVER CFS	INFLUENT MONITORING		EFFLUENT MONITORING								3X5 TOTAL COLIFORM
	M.G.D.	M.G.D.	GPM		B.O.D. mg/L	N.F.R. mg/L	pH	(C°) TEMP	B.O.D. mg/L	NFR mg/L	AMMONIA	CL₂ RES.	RIVER CL₂ RES	SETTLEABLE SOLIDS	
1	1.410	1.573	661	5100			7.0	8.7				2.3	0.00		
2	1.432	1.580	684	3600			7.0	9.6				1.5	0.00		
3	1.341	1.584	641	2780			7.0	8			28	1.5	0.00		<1.8
4	1.276	1.587	608	2420			7.3	7.5			20	1.4	0.00		
5	1.257	1.591	606	2140			7.1	7.6			20	1.1	0.00		
6	1.230	1.592	602	1930			7.4	7.6			18	1.2	0.00		
7	1.215	1.476	600	1800	200	150	7.2	7.8	22	32	28	2.0	0.00	<0.1	
8	1.238	1.351	612	1700			7.2	8.4				3.1	0.00		
9	1.279	1.358	644	1610			7.1	7.7				1.6	0.00		
10	1.188	1.360	593	1520			7.0	7.2			30	1.6	0.00		<1.8
11	1.148	0.934	572	1440			7.3	8.4			20	1.7	0.00		
12	1.148	1.196	560	1390			6.8	9.8			24	0.8	0.00		
13	1.282	1.256	637	1570			6.7	10.3			26	2.1	0.00		
14	1.253	1.318	613	3660	190	170	6.9	10.4	27	34	28	0.4	0.00	<0.1	
15	1.274	1.358	627	2800			6.8	11.1				1.1	0.00		
16	1.338	1.352	659	2640			6.8	11.8				0.4	0.00		
17	1.364	0.989	480	2740			7.1	12.1			26	0.7	0.00		
18	1.263	1.167	1181	2450			6.7	11.4			24	4.7	0.00		<1.8
19	1.258	1.395	1181	2170			6.8	11.4			26	0.2	0.00		
20	1.212	1.077	1141	1970			6.8	11.9			26	1.5	0.00		
21	1.180	1.067	758	1800	260	150	7.1	11.0	13	15	28	1.7	0.00	<0.1	
22	1.203	1.071	781	1580			6.9	10.8				10.2	0.00		
23	1.250	1.076	762	1450			7.0	10.6				4.0	0.00		
24	1.162	0.633	786	1320			7.2	11.6			28	2.1	0.00		1.8
25	1.123	0.000	0	1220			Shut Down For CCB Cleaning								
26	1.103	0.761	1209	1130			7.1	12.83			30	3.6	0.00		
27	1.094	1.469	1034	1060			6.9	11.4			26	0.6	0.00		
28	1.089	1.497	1055	1000	220	260	6.8	12.7	18	29	30	1.8	0.00	<0.1	
29	1.175	1.497	1053	940			6.7	11.5				1.1	0.00		
30	1.223	1.489	1046	1000			7.1	11.7				3.2	0.00		
31	1.120	1.490	1045	940			7.2	12.1			28	2.4	0.00		<1.8

DATE	MONTHLY TESTS			
	TDS	AMMONIA	NITRATE	BORON
1/7/2010	200	23.0	0.2	200

DATE			
1/6/2011	Copper		
	Lead		ND
	Bis phthalate		DNQ
	alph-BHC		ND
	4,4' -DDT		ND
	2,3,7,8-TCDD		ND

Quarterly Tests	Value in ug/l
Dichlorobromomethane	N/A
Bromoform	N/A
Chlorodibromomethane	N/A
Chloroform	N/A

SPILLS:						
None to report						
	BOD mg/L	BOD LBS/DAY	BOD % Removal	NFR mg/L	NFR LBS/DAY	NFR % Removal
30 DAY AVERAGE	20	227	90	28	315	84

ACUTE TOXICITY	
DATE	% Survival
1/11/2011	100%
Rainbow Trout	N/A
C. dubia	

CHRONIC TOXICITY	
TESTED	SURVIVAL
Minnow	N/A
C. Dubia	N/A
Algae	N/A
	TUc

Total Coliform
Monthly
MEDIAN
<1.8
Daily
Maximum
<1.8

SIGNATURE: _____

REMARKS:

 Indicates Permit Exceedance

McKINLEYVILLE COMMUNITY SERVICES DISTRICT
WASTEWATER MANAGEMENT FACILITY
MONITORING DATA

MONTH: FEBRUARY

YEAR: 2011

DATE	INFLUENT FLOW M.G.D.	EFFLUENT FLOW M.G.D.	EFFLUENT MAXIMUM GPM	RIVER CFS	INFLUENT MONITORING				B.O.D. mg/L	NFR mg/L	EFFLUENT MONITORING		RIVER CL ₂ RES	SETTLABLE SOLIDS	3X5 TOTAL COLIFORM
					B.O.D. mg/L	N.F.R. mg/L	pH	(C°) TEMP			AMMONIA	CL ₂ RES.			
1	1.079	1.485	1044	844			6.8	11.9			28	2.7	0.00		
2	1.054	1.481	1042	746			6.8	11.5			28	4.2	0.00		
3	1.015	1.483	1046	693			6.9	11.4			30	3.0	0.00		
4	0.996	1.479	1042	640	230	230	6.9	11.9	22	31	26	1.8	0.00	<0.1	
5	1.041	1.475	1036	620			6.8	11.9				2.1	0.00		
6	1.082	1.479	1037	601			6.8	12.3				1.9	0.00		
7	1.005	1.477	1036	572			6.7	12.1			28	2.3	0.00		<1.8
8	1.004	1.469	1031	554			6.7	11.9			30	2.6	0.00		
9	0.998	1.472	1029	536			6.6	11.3			28	1.6	0.00		
10	0.980	1.472	1037	502			7.2	11.5			32	2.0	0.00		
11	0.970	1.477	1038	485	160	190	7.0	10.4	19	42	32	1.5	0.00	<0.1	
12	1.013	1.471	1033	470			7	10.7				1.5	0.00		
13	1.050	1.466	1031	456			7	11.3				1.7	0.00		
14	0.985	1.247	1025	442			6.8	12.0			28	2.7	0.00		<1.8
15	1.128	1.060	753	726			7.0	12.0			28	2.6	0.00		
16	1.203	1.047	739	5140			7.0	10.5			30	2.8	0.00		
17	1.235	1.153	879	3200			6.7	10.0			28	3.1	0.00		
18	1.231	1.254	886	2960	200	190	7.2	9.4	15	22	28	1.3	0.00	<0.1	
19	1.217	1.257	889	2500			7	10				0.5	0.00		
20	1.170	1.260	888	2020			6.6	10.7				0.4	0.00		
21	1.146	1.262	889	1720			6.9	10.9				0.2	0.00		
22	1.084	1.266	892	1560			6.8	10.5			30	3.9	0.00		<1.8
23	1.067	1.265	893	1390			6.5	9.8			28	0.7	0.00		
24	1.093	1.274	895	1240			6.6	10.3			30	0.8	0.00		
25	1.132	1.272	897	1510	220	170	6.7	10.4	21	30	30	3.7	0.00	<0.1	
26	1.145	1.275	898	1330			6.9	8.5				4.1	0.00		
27	1.175	1.274	897	1150			7.2	9.4				2.7	0.00		
28	1.074	1.270	896	1090			6.8	9.9			30	1.3	0.00		<1.8

DATE	MONTHLY TESTS			
	TDS	AMMONIA	NITRATE	BORON
2/14/2011	230	28.0	ND	210

DATE			
2/14/2011	Copper		
	Lead		ND
	Bis phthalate		DNQ
	alph-BHC		ND
	4,4' -DDT		ND
	2,3,7,8-TCDD		ND

Quarterly Tests	Value in ug/l
Dichlorobromomethane	DNQ
Bromoform	ND
Chlorodibromomethane	ND
Chloroform	1.4 *

SPILLS:						
None to report						
30 DAY AVERAGE	BOD mg/L	BOD LBS/DAY	BOD % Removal	NFR mg/L	NFR LBS/DAY	NFR % Removal
	19	221	90	31	362	84

ACUTE TOXICITY	
DATE	% Survival
2/9/2011	90%
Rainbow Trout	
C. dubia	N/A

CHRONIC TOXICITY	
TESTED	SURVIVAL
Minnow	N/A
C. Dubia	N/A
Algae	N/A
	TUc

Total Coliform
Monthly
MEDIAN
<1.8
Daily
Maximum
<1.8

SIGNATURE: _____

REMARKS: Chloroform trip blank contaminated Indicates Permit Exceedance

McKINLEYVILLE COMMUNITY SERVICES DISTRICT
WASTEWATER MANAGEMENT FACILITY
MONITORING DATA

MONTH: MARCH

YEAR: 2011

DATE	INFLUENT FLOW M.G.D.	EFFLUENT FLOW M.G.D.	EFFLUENT MAXIMUM GPM	RIVER CFS	INFLUENT MONITORING		pH	(C°) TEMP	B.O.D. mg/L	NFR mg/L	EFFLUENT MONITORING		RIVER CL ₂ RES	SETTLABLE SOLIDS	3X5 TOTAL COLIFORM
					B.O.D. mg/L	N.F.R. mg/L					AMMONIA	CL ₂ RES.			
1	1.057	1.266	893	1110			6.7	10.4			28	1.0	0.00		
2	1.082	1.260	886	1290			6.6	11.1			30	1.3	0.00		
3	1.097	1.247	876	3950			6.6	11			30	1.6	0.00		
4	1.077	1.245	876	4100	270	160	6.7	11.0	18	21	30	2.9	0.00	<0.1	
5	1.195	1.245	875	3230			6.7	11.1				0.3	0.00		
6	1.450	1.215	853	9940			6.8	11.1				4.1	0.00		
7	1.274	1.229	864	7350			6.6	11.2			32	0.4	0.00		14.0
8	1.304	1.233	872	5950			6.5	11.4			30	1.4	0.00		
9	1.250	1.266	1023	5780			6.5	11.7			30	0.2	0.00		
10	1.296	1.233	870	4310			6.7	12.9			32	4.7	0.00		
11	1.260	1.227	866	5670	180	160	6.7	12.3	17	22	30	1.4	0.00	<0.1	
12	1.248	1.238	869	4080			6.9	12.8				1	0.00		
13	1.248	1.238	907	3410			6.8	13.1				2.9	0.00		
14	1.307	1.245	867	5950			6.7	12.4			32	3.5	0.00		<1.8
15	1.241	1.232	871	4570			6.7	13.5			28	4.2	0.00		
16	1.411	1.234	851	12400			6.9	12.0			30	2.3	0.00		
17	1.436	1.209	926	9730			6.8	12.1			30	1.5	0.00		
18	1.376	1.281	1000	8310	210	190	6.8	11.5	28	23	30	3.7	0.00	<0.1	
19	1.519	1.391	1007	8940			6.8	10.8				2.7	0.00		
20	1.617	1.434	1012	7080			6.8	11.6				2.3	0.00		
21	1.688	1.443	1255	7060			6.8	11.4			30	1.2	0.00		<1.8
22	1.658	1.545	1271	6440			6.6	11.3			30	1.4	0.00		
23	1.471	1.810	1265	5160			6.6	12.7			28	2.1	0.00		
24	1.452	1.806	1259	6680			6.9	12.6			28	5.1	0.00		
25	1.741	1.685	1235	9080	150	110	6.6	11.1	22	24	28	4.1	0.00	<0.1	
26	1.839	1.633	1259	9090			6.8	11.4				3.7	0.00		
27	1.870	1.796	1268	7460			6.8	12.2				2.2	0.00		
28	1.836	1.810	1269	7460			6.6	11.1			28	2.6	0.00		<1.8
29	1.685	1.809	1270	5960			6.6	12.2			28	1.7	0.00		
30	1.505	1.814	1278	5300			6.6	12.2			30	0.7	0.00		
31	1.435	1.516	1281	5940			6.7	12.7			26	0.6	0.00		

DATE	MONTHLY TESTS			
	TDS	AMMONIA	NITRATE	BORON
3/10/2011	230	26.0	ND	210

DATE			
3/22/2011	Copper		
	Lead	0.65	AMEL .94
	Bis phthalate	DNQ	
	alph-BHC	ND	
	4,4' -DDT	ND	
	2,3,7,8-TCDD	ND	

Quarterly Tests	Value in ug/l
Dichlorobromomethane	N/A
Bromoform	N/A
Chlorodibromomethane	N/A
Chloroform	N/A

SPILLS:

None to report

30 DAY AVERAGE	BOD mg/L	BOD LBS/DAY	BOD % Removal	NFR mg/L	NFR LBS/DAY	NFR % Removal
	21	242	89	23	257	85

ACUTE TOXICITY

DATE	% Survival
3/15/2011	100%
N/A	

Rainbow Trout
C. dubia

CHRONIC TOXICITY

TESTED	SURVIVAL
Minnow	2
C. Dubia	1.33
Algae	1
	TUc

Total Coliform
Monthly
MEDIAN
<1.8
Daily
Maximum
14

SIGNATURE: _____

REMARKS:

 Indicates Permit Exceedance

McKINLEYVILLE COMMUNITY SERVICES DISTRICT
WASTEWATER MANAGEMENT FACILITY
MONITORING DATA

MONTH: APRIL

YEAR: 2011

DATE	INFLUENT FLOW M.G.D.	EFFLUENT FLOW M.G.D.	EFFLUENT MAXIMUM GPM	RIVER CFS	INFLUENT MONITORING		pH	(C°) TEMP	B.O.D. mg/L	NFR mg/L	EFFLUENT MONITORING		RIVER CL ₂ RES	SETTLABLE SOLIDS	3X5 TOTAL COLIFORM
					B.O.D. mg/L	N.F.R. mg/L					AMMONIA	CL ₂ RES.			
1	1.400	1.526	1244	6490	150	130	6.6	13.5	22	30	28	1.3	0.00	<0.1	
2	1.405	1.816	1281	6680			6.9	13.0				0.2	0.00		
3	1.420	1.836	1288	5770			6.8	12.5				0.4	0.00		
4	1.380	1.836	1293	4450			6.4	13.2			26	0.7	0.00		
5	1.282	1.840	1293	4040			6.8	13.1			20	3.3	0.00		<1.8
6	1.289	1.738	1281	3580			6.7	13.4			20	2	0.00		
7	1.289	1.662	1179	3280			6.7	12.7			28	3.7	0.00		
8	1.272	1.623	1139	2860	180	190	6.9	13.3	19	33	20	2.0	0.00	<0.1	
9	1.290	1.621	1148	2400			6.8	12.7				2.5	0.00		
10	1.324	1.621	1138	2040			6.9	13.0				2.2	0.00		
11	1.246	1.619	1133	2010			7.0	13.6			24	3.4	0.00		<1.8
12	1.203	1.626	1137	1910			6.7	13.8			20	3.6	0.00		
13	1.206	1.628	1147	1870			7.2	13.6			20	4.1	0.00		
14	1.165	1.473	1140	1720			7.1	13.6			20	3.5	0.00		
15	1.339	1.213	854	1680	210	220	7.2	14.1	28	47	20	4.2	0.00	<0.1	
16	1.441	1.184	831	7770			6.9	14.0				1.8	0.00		
17	1.622	1.191	833	7280			6.8	14.1				0.3	0.00		
18	1.615	1.191	1006	8420			6.9	13.4			20	3.2	0.00		<1.8
19	1.437	1.451	1019	6420			7.1	13.3			18	1.1	0.00		
20	1.395	1.459	1025	4470			6.7	14.5			20	0.6	0.00		
21	1.349	1.466	1032	2570			7.0	13.7			18	2.7	0.00		
22	1.362	1.466	1031	2530	210	200	6.9	14.0	24	38	20	3.8	0.00	<0.1	
23	1.311	1.464	1027	2570			6.7	13.9				2.2	0.00		
24	1.309	1.471	1078	2530			6.6	13.9				2.1	0.00		
25	1.265	1.463	1025	2720			6.8	14.4			16	1.3	0.00		<1.8
26	1.224	1.461	1028	3210			7	14.3			16	1.7	0.00		
27	1.195	1.465	1031	2570			7	14.1			16	1.2	0.00		
28	1.176	1.474	1032	2260			7.1	14.6			16	1.3	0.00		
29	1.150	1.470	1037	2020	240	350	7.1	14.7	24	40	14	2.3	0.00	<0.1	
30	1.167	1.461	1027	1790								2.7	0.00		
31															

DATE	MONTHLY TESTS			
	TDS	AMMONIA	NITRATE	BORON
4/13/2011	210	29.0	ND	150

Semi-Annual Tests		Value in ug/l
Bis phthalate		ND
alph-BHC		ND
4,4' -DDT		ND
carbon tetrachloride		

Quarterly Tests		Value in ug/l
Dichlorobromomethane		DNQ
Bromoform		ND
Chlorodibromomethane		ND
Chloroform		0.91

SPILLS:

None to report

30 DAY AVERAGE	BOD mg/L	BOD LBS/DAY	BOD % Removal	NFR mg/L	NFR LBS/DAY	NFR % Removal
	23	284	88	38	456	82

ACUTE TOXICITY

DATE	% Survival	Median
April	75%	
Rainbow Trout C. dubia	N/A	

CHRONIC TOXICITY

TESTED	SURVIVAL
Minnow	N/A
C. Dubia	N/A
Algae	N/A
	TUc

Total Coliform

Monthly MEDIAN	<1.8
Daily Maximum	<1.8

SIGNATURE: _____

REMARKS:

 Indicates Permit Exceedance

McKINLEYVILLE COMMUNITY SERVICES DISTRICT
WASTEWATER MANAGEMENT FACILITY
MONITORING DATA

MONTH: MAY

YEAR: 2011

DATE	INFLUENT FLOW M.G.D.	EFFLUENT FLOW M.G.D.	EFFLUENT MAXIMUM GPM	RIVER CFS	INFLUENT MONITORING		pH	(C°) TEMP	B.O.D. mg/L	NFR mg/L	EFFLUENT MONITORING		RIVER CL ₂ RES	SETTLABLE SOLIDS	3X5 TOTAL COLIFORM
					B.O.D. mg/L	N.F.R. mg/L					AMMONIA	CL ₂ RES.			
1	1.215	1.461	1034	1630								2.8	0.00		
2	1.154	1.454	1022	1540			7.3	14.9			16	2.1	0.00		<1.8
3	1.129	0.814	1029	1320			7.1	15.1			20	2.9	0.00		
4	1.114	0.000	0	1260			Shut Down								
5	1.108	0.579	831	1320			7.1	15.8			20	4.9	0.00		
6	1.091	1.018	832	1280	260	410	6.6	14.6	19	44	20	0.2	0.00	<0.1	
7	1.108	1.190	844	1240			7.1	14.4				3.5	0.00		
8	1.145	1.194	859	1270			7.1	14.4				3.8	0.00		
9	1.120	1.180	829	1170			6.7	14.3			20	2.1	0.00		<1.8
10	1.073	1.176	826	1060			6.7	14.7			18	2.0	0.00		
11	1.065	1.176	823	1020			6.9	15.5			22	1.1	0.00		
12	1.074	1.176	883	965			6.7	15.5			20	2.6	0.00		
13	1.051	1.168	822	940	200	210	7.1	15.4	15	42	20	2.9	0.00	<0.1	
14	1.072	0.538	820	828			6.7	15.5				2.4	0.00		
15	1.160	0.197	142												
16	1.094	0.587	1102				7.0	15.2			18	2.4			<1.8
17	1.046	0.892	887				6.5	13.7			22	3.6			
18	1.047	0.982	960				6.9	14.5			16	4.4			
19	1.031	0.883	853				6.7	14.6			20	2.7			
20	1.002	0.719	829		270	310	7.1	15.1	19	28	18	2.8		<0.1	
21	1.025	0.460	325												
22	1.082	0.459	322												
23	1.011	0.744	896				6.5	15.2			20	3.3			<1.8
24	0.989	0.929	899				6.7	15.5			18	3.5			
25	1.001	0.750	800				6.6	15.1			20	4.1			
26	0.997	0.746	893				6.6	15.6			18	4.3			
27	0.973	0.768	747		2400	210	6.7	15.5	19	33	22	4.4		<0.1	
28	0.952	0.513	361												
29	0.956	0.513	362												
30	1.047	0.510	360												
31	0.973	0.740	584				6.9	15.5			20	4.0			<1.8

DATE	MONTHLY TESTS			
	TDS	AMMONIA	NITRATE	BORON
5/11/2011	230	23.0	ND	180

Semi-Annual Tests	Value in ug/l
Bis phthalate	ND
alph-BHC	ND
4,4' -DDT	ND
Carbon tetrachloride	3

Quarterly Tests	Value in ug/l
Dichlorobromomethane	N/A
Bromoform	N/A
Chlorodibromomethane	N/A
Chloroform	N/A

SPILLS:

None to report

30 DAY AVERAGE	BOD mg/L	BOD LBS/DAY	BOD % Removal	NFR mg/L	NFR LBS/DAY	NFR % Removal
	18	126	93	37	275	86

ACUTE TOXICITY

DATE	% Survival	MEDIAN
5/31/2011	95%	
Rainbow Trout	N/A	
C. dubia		

CHRONIC TOXICITY

TESTED	SURVIVAL
Minnow	N/A
C. Dubia	N/A
Algae	N/A
TUc	

Total Coliform
Monthly
MEDIAN
<1.8
Daily
Maximum
<1.8

SIGNATURE: _____

 Indicates Permit Exceedance

REMARKS: 5/4/2011 Discharge shut down for CCB cleaning

McKINLEYVILLE COMMUNITY SERVICES DISTRICT
WASTEWATER MANAGEMENT FACILITY
MONITORING DATA

MONTH: JUNE

YEAR: 2011

DATE	INFLUENT FLOW M.G.D.	EFFLUENT FLOW M.G.D.	EFFLUENT MAXIMUM GPM	RIVER CFS	INFLUENT MONITORING		(C°)		B.O.D. mg/L	NFR mg/L	EFFLUENT MONITORING		RIVER CL ₂ RES	SETTLABLE SOLIDS	3X5 TOTAL COLIFORM
					B.O.D. mg/L	N.F.R. mg/L	pH	TEMP			AMMONIA	CL ₂ RES.			
1	0.968	1.297	574				6.8	14.9			20	4.0			
2	0.978	1.217	1125				6.7	15.0			24	3.9			
3	0.966	0.966	1125		260	230	6.9	15.4	31	21	24	3.4		<0.1	
4	0.960	0.412	292												
5	1.037	0.416	293												
6	0.989	0.861	1159				6.8	16.8			28	0.9			<1.8
7	0.948	1.348	1175				6.6	16.5			24	4.2			
8	0.969	1.319	1175				6.8	16.4			20	5.3			
9	0.943	1.337	1316				6.8	16.5			22	3.1			
10	0.934	1.206	1321		320	260	7.0	16.7	30	32	20	2.4		<0.1	
11	0.946	0.555	391												
12	0.975	0.547	386												
13	0.952	1.016	1347				6.8	17.2			20	4.3			<1.8
14	0.927	1.515	1372				6.6	17.2			24	1.2			
15	0.930	1.507	1279				6.5	17.5			22	0.2			
16	0.926	1.480	1279				6.5	17.0			24	0.4			
17	0.923	1.091	1219		260	230	7.0	17.2	30	34	24	2.4		<0.1	
18	0.901	0.378	270												
19	0.924	0.381	267												
20	0.942	0.839	1222				6.9	17			24	2.8			<1.8
21	0.894	0.725	1202				6.8	17.0			24	8.2			
22	1.022	1.128	1027				6.7	17.3			28	6.7			
23	0.990	1.105	982				7.1	17.4			32	1.8			
24	0.974	0.920	960		260	200	7.1	17.5	22	26	24	1.8		<0.1	
25	0.974	0.556	413												
26	1.032	0.585	413												
27	1.000	0.896	1042				7	17.3			24	1.2			1.8
28	1.058	1.208	1042				7.0	17.7			26	0.1			
29	1.034	1.220	1071				6.9	17.5			22	0.1			
30	0.978	1.520	1196				6.8	17.7			30	0.1			

DATE	MONTHLY TESTS			
	TDS	AMMONIA	NITRATE	BORON
6/21/2011	270	15.0	ND	230

Semi-Annual Tests	Value in ug/l
Bis phthalate	N/A
alph-BHC	N/A
4,4' -DDT	N/A
carbon tetrachloride	N/A

Quarterly Tests	Value in ug/l
Dichlorobromomethane	N/A
Bromoform	N/A
Chlorodibromomethane	N/A
Chloroform	N/A

SPILLS:

None to report

30 DAY AVERAGE	BOD mg/L	BOD LBS/DAY	BOD % Removal	NFR mg/L	NFR LBS/DAY	NFR % Removal
	28	248	90	28	250	88

ACUTE TOXICITY

DATE	% Survival
Rainbow Trout	N/A
C. dubia	N/A

CHRONIC TOXICITY

TESTED	SURVIVAL
Minnow	N/A
C. Dubia	N/A
Algae	N/A
	TUc

Total Coliform
Monthly
MEDIAN
<1.8
Daily
Maximum
1.8

SIGNATURE: _____

REMARKS:

 Indicates Permit Exceedance

McKINLEYVILLE COMMUNITY SERVICES DISTRICT
WASTEWATER MANAGEMENT FACILITY
MONITORING DATA

MONTH: JULY

YEAR: 2011

DATE	INFLUENT FLOW M.G.D.	EFFLUENT FLOW M.G.D.	EFFLUENT MAXIMUM GPM	RIVER CFS	INFLUENT MONITORING		(C°)		B.O.D. mg/L	NFR mg/L	EFFLUENT MONITORING		RIVER CL ₂ RES	SETTLEABLE SOLIDS	3X5 TOTAL COLIFORM
					B.O.D. mg/L	N.F.R. mg/L					AMMONIA	CL ₂ RES.			
1	0.896	0.717	1040		260	200	7.1	17.6	25	34	24	7.0		<0.1	
2	0.862	0.507	441												
3	0.857	0.191	171												
4	0.874	0.221	199												
5	0.883	0.701	1102				6.6	16.7			32	1			<1.8
6	0.888	1.284	1132				6.6	19.3			28	3.4			
7	0.880	1.088	1467				6.8	19.7			24	3.1			
8	0.871	0.464	408		260	220	6.8	16.4	18	23	28	4.2		<0.1	
9	0.869	0.465	330												
10	0.897	0.455	323												
11	0.885	0.636	853				6.7	17.3			28	1.4			1.8
12	0.880	0.948	855				6.7	17.5			30	0.1			
13	0.872	0.888	821				6.9	18.4			32	1.3			
14	0.872	0.580	671				6.7	18.1			32	6.9			
15	0.850	0.614	647		230	200	6.6	17.7	19	24	28	4.6		<0.1	
16	0.836	0.510	365												
17	0.884	0.502	361												
18	0.859	0.785	1043				6.9	20.2			26	0.7			<1.8
19	0.863	1.159	1011				7.3	19.4			28	3.7			
20	0.860	1.065	1016				7.1	19.4			24	2.1			
21	0.860	1.005	954				6.8	19.7			28	3.2			
22	0.841	0.845	857		220	190	6.7	20.0	40	73	32	3.3		<0.1	
23	0.843	0.722	516												
24	0.875	0.714	509												
25	0.863	0.804	1004				7.1	20.1			22	4.5			<1.8
26	0.870	1.125	912				6.8	19.4			30	3.2			
27	0.868	1.060	913				6.8	19.4			24	4.6			
28	0.852	0.636	912				6.7	18.8			32	5.0			
29	0.854	0.273	583		290	290	6.8	18.2	14	34	32	0.6		<0.1	
30	0.841	0.208	160												
31	0.878	0.222	165												

DATE	MONTHLY TESTS			
	TDS	AMMONIA	NITRATE	BORON
7/20/2011	320	26.0	ND	260

Semi-Annual Tests	Value in ug/l
Bis phthalate	
alph-BHC	
4,4' -DDT	
carbon tetrachloride	

Quarterly Tests	Value in ug/l
Dichlorobromomethane	0.4
Bromoform	ND
Chlorodibromomethane	ND
Chloroform	3

SPILLS:

None to report

30 DAY AVERAGE	BOD mg/L	BOD LBS/DAY	BOD % Removal	NFR mg/L	NFR LBS/DAY	NFR % Removal
	23	120	90	39	201	82

ACUTE TOXICITY

DATE	% Survival
Rainbow Trout	N/A
C. dubia	N/A

CHRONIC TOXICITY

TESTED	SURVIVAL
Minnow	N/A
C. Dubia	N/A
Algae	N/A
	TUc

Total Coliform
Monthly
MEDIAN
<1.8
Daily
Maximum
1.8

SIGNATURE: _____

REMARKS:

 Indicates Permit Exceedance

McKINLEYVILLE COMMUNITY SERVICES DISTRICT
WASTEWATER MANAGEMENT FACILITY
MONITORING DATA

MONTH: AUGUST

YEAR: 2011

DATE	INFLUENT FLOW M.G.D.	EFFLUENT FLOW M.G.D.	EFFLUENT MAXIMUM GPM	RIVER CFS	INFLUENT MONITORING		pH	(C°) TEMP	B.O.D. mg/L	NFR mg/L	EFFLUENT MONITORING		RIVER CL ₂ RES	SETTLABLE SOLIDS	3X5 TOTAL COLIFORM
					B.O.D. mg/L	N.F.R. mg/L					AMMONIA	CL ₂ RES.			
1	0.878	0.794	794				7.0	17.9			28	1.6			4.5
2	0.849	0.920	920				7.0	17.4			30	9.9			
3	0.855	0.841	841				6.8	17.3			28	2.6			
4	0.849	0.929	929				6.7	17.8			30	0.4			
5	0.852	0.876	876		300	610	6.7	17.9	22	26	34	0.5		<0.1	
6	0.833	0.241	241												
7	0.868	0.266	266												
8	0.852	0.757	1109				6.6	17.4			32	0.8			<1.8
9	0.841	1.062	1018				6.6	17.4			32	0.9			
10	0.851	0.982	952				6.6	17.6			30	1.4			
11	0.837	0.904	886				6.8	17.8			30	1.4			
12	0.830	0.728	902		450	150	7	17.6	14	22	34	1.4		<0.1	
13	0.833	0.416	295												
14	0.873	0.421	298												
15	0.866	0.819	1132				6.8	17.7			32	0.7			
16	0.852	1.109	1066				6.7	18.3			32	1.8			<1.8
17	0.860	0.907	821				6.9	18.0			34	3.4			
18	0.862	0.910	826				6.7	17.6			36	3.7			
19	0.866	0.692	827		290	220	6.7	17.7	13	20	28	2.7		<0.1	
20	0.837	0.294	209												
21	0.890	0.296	210												
22	0.862	0.633	900				6.7	17.7			30	1.6			<1.8
23	0.860	0.979	810				6.8	17.5			32	3.3			
24	0.854	0.872	780				6.8	18.5			34	2.4			
25	0.843	0.899	840				6.9	18.4			34	2.8			
26	0.833	0.741	853		320	250	6.6	18.1	10	13	34	2.6		<0.1	
27	0.878	0.301	213												
28	0.940	0.306	216												
29	0.860	0.655	941				6.9	17.7			32	1.9			<1.8
30	0.851	0.976	987				6.7	17.7			34	3.1			
31	0.854	0.905	906				6.7	17.8			32	5.3			

DATE	MONTHLY TESTS			
	TDS	AMMONIA	NITRATE	BORON
8/8/2011	320	26.0	ND	260

Semi-Annual Tests	Value in ug/l
Bis phthalate	N/A
alph-BHC	N/A
4,4' -DDT	N/A
carbon tetrachloride	N/A

Quarterly Tests	Value in ug/l
Dichlorobromomethane	N/A
Bromoform	N/A
Chlorodibromomethane	N/A
Chloroform	N/A

SIGNATURE: _____

REMARKS:

SPILLS:

None to report

30 DAY AVERAGE	BOD mg/L	BOD LBS/DAY	BOD % Removal	NFR mg/L	NFR LBS/DAY	NFR % Removal
	15	96	95	20	130	92

ACUTE TOXICITY

DATE	% Survival
N/A	
N/A	
N/A	
N/A	

Rainbow Trout
C. dubia

CHRONIC TOXICITY

TESTED	SURVIVAL
Minnow	N/A
C. Dubia	N/A
Algae	N/A
	TUc

 Indicates Permit Exceedance

Total Coliform
Monthly
MEDIAN
<1.8
Daily
Maximum
4.5

McKINLEYVILLE COMMUNITY SERVICES DISTRICT
WASTEWATER MANAGEMENT FACILITY
MONITORING DATA

MONTH: SEPTEMBER 2011

YEAR: 2011

DATE	INFLUENT FLOW M.G.D.	EFFLUENT FLOW M.G.D.	EFFLUENT MAXIMUM GPM	RIVER CFS	INFLUENT MONITORING		(C°) TEMP		B.O.D. mg/L	NFR mg/L	EFFLUENT MONITORING		RIVER CL ₂ RES	SETTLEABLE SOLIDS	3X5 TOTAL COLIFORM
					B.O.D. mg/L	N.F.R. mg/L					AMMONIA	CL ₂ RES.			
1	0.840	0.909	911				6.7	17.4			32	5.4			
2	0.827	0.733	995		260	200	6.7	17.0	21	15	36	6.1		<0.1	
3	0.804	0.348	247												
4	0.799	0.355	249												
5	0.932	0.361	256												
6	0.839	0.799	1076				6.7	16.3			36	6.2			<1.8
7	0.852	1.185	1081				6.7	16.2			34	8.9			
8	0.830	1.092	929				6.8	16.2			36	5.6			
9	0.835	0.844	941		320	230	6.9	16.4	17	14	36	4.4		<0.1	
10	0.854	0.414	291												
11	0.905	0.415	291												
12	0.850	0.737	948				6.6	16.7			32	2.3			<1.8
13	0.829	1.063	962				6.6	17.1			32	0.9			
14	0.847	1.110	1037				6.7	17.4			28	1.9			
15	0.831	1.185	1096				7.0	17.2			32	3.3			
16	0.828	0.995	1079		270	240	7.2	16.8	16	17	28	3.9		<0.1	
17	0.845	0.618	435												
18	0.893	0.617	433												
19	0.856	0.932	1069				6.8	16.4			30	6.1			<1.8
20	0.823	1.174	1048				6.8	16.2			36	3.8			
21	0.840	1.143	1071				6.8	16.2			36	3.0			
22	0.823	1.139	931				6.9	16.6			34	2.6			
23	0.798	0.964	1089		240	190	6.9	17.5	15	20	36	1.3		<0.1	
24	0.823	0.552	387												
25	0.924	0.557	391												
26	0.847	0.833	1103				6.9	16.8			34	1.6			<1.8
27	0.844	1.175	1113				6.7	17.1			30	0.8			
28	0.818	1.071	1111				6.9	17.1			30	2.2			
29	0.817	1.065	1109				7.0	17.2			30	2.3			
30	0.807	0.899	1078		220	210	6.9	17.0	15	16	36	1.4		<0.1	

DATE	MONTHLY TESTS			
	TDS	AMMONIA	NITRATE	BORON
9/7/2011	320	17.0	ND	270

Semi-Annual Tests	Value in ug/l
Bis phthalate	N/A
alph-BHC	N/A
4,4' -DDT	N/A
carbon tetrachloride	N/A

Quarterly Tests	Value in ug/l
Dichlorobromomethane	N/A
Bromoform	N/A
Chlorodibromomethane	N/A
Chloroform	N/A

SPILLS:

None to report

30 DAY AVERAGE	BOD mg/L	BOD LBS/DAY	BOD % Removal	NFR mg/L	NFR LBS/DAY	NFR % Removal
	17	123	94	16	122	92

ACUTE TOXICITY

DATE	% Survival
Rainbow Trout	N/A
C. dubia	N/A

CHRONIC TOXICITY

TESTED	SURVIVAL
Minnow	N/A
C. Dubia	N/A
Algae	N/A
	TUc

Total Coliform
Monthly
MEDIAN
<1.8
Daily
Maximum
<1.8

SIGNATURE: _____

REMARKS:

 Indicates Permit Exceedance

McKINLEYVILLE COMMUNITY SERVICES DISTRICT
WASTEWATER MANAGEMENT FACILITY
MONITORING DATA

MONTH: OCTOBER

YEAR: 2011

DATE	INFLUENT FLOW M.G.D.	EFFLUENT FLOW M.G.D.	EFFLUENT MAXIMUM GPM	RIVER CFS	INFLUENT MONITORING		(C°)		B.O.D. mg/L	NFR mg/L	EFFLUENT MONITORING		RIVER CL ₂ RES	SETTLEABLE SOLIDS	3X5 TOTAL COLIFORM
					B.O.D. mg/L	N.F.R. mg/L					AMMONIA	CL ₂ RES.			
1	0.845	0.529	371												
2	0.914	0.523	366												
3	0.909	0.633	817				6.9	16.9			34	4.4			<1.8
4	0.914	0.866	945				6.9	16.1			34	1.1			
5	0.917	0.783	695				6.9	15.5			34	3.7			
6	0.951	0.872	902				7.1	15.1			28	5			
7	0.859	0.852	1007		250	280	6.8	14.5	14	15	32	4.7		<0.1	
8	0.873	0.427	310												
9	0.929	0.421	297												
10	1.002	0.434	311												
11	0.911	0.798	999				6.9	16.4			22	0.5			<1.8
12	0.886	1.242	1122				7	15.7			26	3.3			
13	0.868	1.273	1125				7	15.6			26	5.3			
14	0.828	0.918	1093		310	350	6.9	16.1	19	24	30	3.2		<0.1	
15	0.872	0.461	342												
16	0.914	0.513	372												
17	0.865	0.907	1167				7.0	16.3			26	2.2			<1.8
18	0.859	0.792	1168				7.0	15.8			26	2.2			
19	0.854	0.000	0												
20	0.848	0.754	1138				6.9	15.9			28	1.1			
21	0.829	1.039	1139		270	360	6.9	15.9	31	17	22	2.8		<0.1	
22	0.871	0.508	358												
23	0.926	0.518	370												
24	0.870	0.946	931				7.1	15.3			22	4.3			<1.8
25	0.843	1.142	803				7.1	14.3			24	4.7			
26	0.848	1.163	823				7	13.8			26	5.1			
27	0.841	1.145	820				7.2	13.4			26	3.5			
28	0.896	0.921	870		250	250	7.3	13.7	18	30	20	3.6		<0.1	
29	1.012	0.604	426												
30	1.031	0.598	420												
31	0.934	1.128	1030				7.0	14.4			24	3.0			<1.8

DATE	MONTHLY TESTS			
	TDS	AMMONIA	NITRATE	BORON
10/5/2011	300	22.0	ND	260

Semi-Annual Tests	Value in ug/l
Bis phthalate	N/A
alph-BHC	N/A
4,4' -DDT	N/A
carbon tetrachloride	N/A

Quarterly Tests	Value in ug/l
Dichlorobromomethane	DNQ
Bromoform	ND
Chlorodibromomethane	ND
Chloroform	2.6

SPILLS:

None to report

30 DAY AVERAGE	BOD mg/L	BOD LBS/DAY	BOD % Removal	NFR mg/L	NFR LBS/DAY	NFR % Removal
	21	163	92	22	167	93

ACUTE TOXICITY

DATE	% Survival
Rainbow Trout	N/A
C. dubia	N/A

CHRONIC TOXICITY

TESTED	SURVIVAL
Minnow	N/A
C. Dubia	N/A
Algae	N/A
	TUc

Total Coliform

Monthly
MEDIAN
<1.8
Daily
Maximum
<1.8

SIGNATURE: _____

REMARKS:

 Indicates Permit Exceedance

McKINLEYVILLE COMMUNITY SERVICES DISTRICT
WASTEWATER MANAGEMENT FACILITY
MONITORING DATA

MONTH: NOVEMBER

YEAR: 2011

DATE	INFLUENT FLOW M.G.D.	EFFLUENT FLOW M.G.D.	EFFLUENT MAXIMUM GPM	RIVER CFS	INFLUENT MONITORING				B.O.D. mg/L	NFR mg/L	EFFLUENT MONITORING		RIVER CL ₂ RES	SETTLABLE SOLIDS	3X5 TOTAL COLIFORM
					B.O.D. mg/L	N.F.R. mg/L	pH	(C°) TEMP			AMMONIA	CL ₂ RES.			
1	0.930	1.412	1027				7.1	13			30	3.0			
2	0.905	1.384	986				7.1	13.0			28	2.9			
3	0.933	1.305	993				7.0	13.1			24	4.1			
4	0.910	1.000	957		260	220	7.3	12.3	21	43	28	1.5		<0.1	
5	0.954	0.581	409												
6	1.066	0.575	404												
7	0.942	1.039	963				7.3	11.6			28	4.8			<1.8
8	0.901	1.354	965				6.9	11.2			26	3.7			
9	0.896	1.370	972				7.6	11.2			30	2.7			
10	0.874	1.066	973		260	210	7.0	11.4	28	35	28	2.2		<0.1	
11	0.887	0.636	448												
12	0.880	0.627	442												
13	0.935	0.624	437												
14	0.881	1.036	950				7.0	11.6			28	2.5			<1.8
15	0.853	1.331	952				7.1	10.8			30	1.2			
16	0.875	1.314	943				6.9	11.9			30	0.7			
17	0.885	1.268	903				6.9	12.4			32	1.9			
18	0.898	1.033	929		230	190	6.9	11.9	24	42	34	1.1		<0.1	
19	0.951	0.805	569												
20	0.947	0.795	558												
21	0.895	1.073	905				7.0	11.0			34	3.4			<1.8
22	0.895	1.303	921		270	280	6.9	11.4	25	34	32	1.9			
23	0.995	1.026	957				6.9	12.0			32	1.6		<0.1	
24	1.016	0.670	473												
25	0.888	0.665	466												
26	0.914	0.664	468												
27	0.974	0.662	463												
28	0.932	1.108	951				6.9	11.3			32	2.5			<1.8
29	0.921	1.337	952				6.8	11.3			32	0.2			
30	0.895	1.355	996				6.9	10.7			32	1.1			

DATE	MONTHLY TESTS			
	TDS	AMMONIA	NITRATE	BORON
11/3/2011	310	25.0	ND	230

Semi-Annual Tests	Value in ug/l
Bis phthalate	N/A
alph-BHC	N/A
4,4' -DDT	N/A
carbon tetrachloride	N/A

Quarterly Tests	Value in ug/l
Dichlorobromomethane	N/A
Bromoform	N/A
Chlorodibromomethane	N/A
Chloroform	N/A

SPILLS:

None to report

30 DAY AVERAGE	BOD mg/L	BOD LBS/DAY	BOD % Removal	NFR mg/L	NFR LBS/DAY	NFR % Removal
	25	226	90	39	350	82

ACUTE TOXICITY

DATE	% Survival
Rainbow Trout	N/A
C. dubia	N/A

CHRONIC TOXICITY

TESTED	SURVIVAL
Minnow	N/A
C. Dubia	N/A
Algae	N/A
	TUc

Total Coliform

Monthly
MEDIAN
<1.8
Daily
Maximum
<1.8

SIGNATURE: _____

REMARKS:

 Indicates Permit Exceedance

McKINLEYVILLE COMMUNITY SERVICES DISTRICT
WASTEWATER MANAGEMENT FACILITY
MONITORING DATA

MONTH: DECEMBER

YEAR: 2011

DATE	INFLUENT FLOW M.G.D.	EFFLUENT FLOW M.G.D.	EFFLUENT MAXIMUM GPM	RIVER CFS	INFLUENT MONITORING		pH	(C°) TEMP	B.O.D. mg/L	NFR mg/L	EFFLUENT MONITORING		RIVER CL ₂ RES	SETTLEABLE SOLIDS	3X5 TOTAL COLIFORM
					B.O.D. mg/L	N.F.R. mg/L					AMMONIA	CL ₂ RES.			
1	0.866	1.339	960				6.8	10.1			30				
2	0.851	0.927	1007		400	490	7.2	11.0	17	31	24			<0.1	
3	0.909	0.592	430												
4	0.949	0.637	462												
5	0.882	1.087	940				6.9	8.7			30				<1.8
6	0.860	1.352	964				7	8.5			36				
7	0.869	1.347	929				7.1	8.8			36				
8	0.867	1.362	974				7.0	8.2			34				
9	0.842	0.966	977		300	250	7.1	7.7	26	42	34			<0.1	
10	1.000	0.686	481												
11	1.072	0.684	481												
12	1.012	1.049	930				7.1	7.9			34				<1.8
13	0.974	1.357	963				7.3	7.6			30				
14	0.982	1.348	963				7.2	8.8			34				
15	0.986	1.353	962				7.2	9.8			30				
16	0.742	0.971	963		250	240	7.2	9.8	19	46	30			<0.1	
17	0.968	0.582	409												
18	1.008	0.583	410												
19	0.980	1.039	954				7.3	8.4			30				<1.8
20	0.962	1.384	980				7.1	8.2			32				
21	0.952	1.332	984				7.2	9.6			32				
22	0.864	1.026	1043		350	320	7.4	8.3	31	40	34			<0.1	
23	0.956	0.881	615												
24	1.014	0.882	618												
25	0.926	0.884	617												
26	1.002	0.883	618												
27	0.974	1.117	897				7	8.5			32				<1.8
28	0.966	1.309	929				7.0	9.4			36				
29	0.953	1.296	925		280	210	6.7	10.5	32	46	34				
30	1.064	0.782	889				6.7	11.2			32			<0.1	
31	1.017	0.458	324												

DATE	MONTHLY TESTS			
	TDS	AMMONIA	NITRATE	BORON
12/21/2011	280	31.0	ND	180

Semi-Annual Tests	Value in ug/l
Bis phthalate	N/A
alph-BHC	N/A
4,4' -DDT	N/A
carbon tetrachloride	N/A

Quarterly Tests	Value in ug/l
Dichlorobromomethane	N/A
Bromoform	N/A
Chlorodibromomethane	N/A
Chloroform	N/A

SPILLS:

None to report

30 DAY AVERAGE	BOD mg/L	BOD LBS/DAY	BOD % Removal	NFR mg/L	NFR LBS/DAY	NFR % Removal
	25	221	92	41	358	85

ACUTE TOXICITY

DATE	% Survival
Rainbow Trout	N/A
C. dubia	N/A

CHRONIC TOXICITY

TESTED	SURVIVAL
Minnow	N/A
C. Dubia	N/A
Algae	N/A
	TUc

Total Coliform
Monthly
MEDIAN
<1.8
Daily
Maximum
<1.8

SIGNATURE: _____

REMARKS:

 Indicates Permit Exceedance

McKinleyville Community Services District

Wastewater Management Facility

Influent & Effluent Testing

pH, Temperature, Ammonia, CL½ Res,

Settleable Solids, BOD, NFR =

pH, mg/L, ° C

AVERAGE ANNUAL 2011

Date	INFLUENT			AMMONIA mg/L	UN-IONIZED NH3 (mg/L)	BOD	NFR		EFFLUENT				AMMONIA mg/L	UN-IONIZED NH3 (mg/L)	NTU	CL½ Res	River CL½ Res	Coliform 3x5	BOD	NFR
	pH	Temp	S.S						pH	Temp	D.O.	S.S.								
JANUARY	7.5	14.5	10.9	30.0	0.407	218	183		7.0	10.2	3.8	<0.1	25.7	0.074	67.7	2.1	0.0	<2	20	28
FEBRUARY	7.6	14.6	16.8	37.6	0.671	203	195		6.9	10.9	3.7	<0.1	29.1	0.058	61.9	2.1	0.0	<1.8	19	31
MARCH	7.5	14.4	17.0	33.2	0.430	203	155		6.7	11.8	3.5	<0.1	29.5	0.042	38.7	2.2	0.0	<1.8	21	23
APRIL	7.4	14.6	17.8	27.2	0.329	198	218		6.9	13.7	3.7	<0.1	20.0	0.055	51.9	2.2	0.0	<1.8	23	38
MAY	7.9	15.8	19.8	35.0	1.103	243	285		6.8	15.0	4.1	<0.1	19.4	0.051	104.9	3.0	0.0	<1.8	18	37
JUNE	7.7	17.2	16.8	35.5	1.099	275	230		6.8	16.9	4.1	<0.1	24.1	0.068	151.7	2.7	0.0	<1.8	28	28
JULY	7.6	18.3	20.4	37.6	1.026	252	220		6.8	18.7	3.7	<0.1	28.2	0.101	124.4	3.2	0.0	<1.8	23	38
AUGUST	7.9	19.3	18.3	40.9	1.849	340	308		6.8	17.8	3.6	<0.1	31.8	0.088	81.6	2.4	0.0	<1.8	15	20
SEPTEMBER	8.0	19.4	20.4	42.3	2.363	262	214		6.8	16.8	3.8	<0.1	33.0	0.093	98.6	3.5	0.0	<1.8	17	16
OCTOBER	7.9	18.6	24.3	39.1	2.021	270	310		7.0	15.3	4.3	<0.1	26.8	0.096	150.4	3.4	0.0	<1.8	21	22
NOVEMBER	8.1	17.3	25.3	42.1	2.353	255	225		7.0	11.7	3.8	<0.1	30.0	0.100	140.0	2.3	0.0	<1.8	25	39
DECEMBER	7.9	15.3	20.8	40.4	1.437	316	302		7.1	9.1	3.7	<0.1	32.2	0.095	99.2	2.6	0.0	<1.8	25	41
Average	7.8	16.6	19.0	36.7	1.257	253	237		6.9	14.0	3.8	<0.1	27.5	0.077	97.6	2.6	0.0	<1.8	21	30
Maximum	8.1	19.4	25.3	42.3	2.363	340	310		7.1	18.7	4.3	<0.1	33.0	0.101	151.7	3.5	0.0	<2	28	41
Minimum	7.4	14.4	10.9	27.2	0.329	198	155		6.7	9.1	3.5	<0.1	19.4	0.042	38.7	2.1	0.0	<1.8	15	16

McKinleyville Community Services District
Wastewater Management Facility
Influent & Effluent Testing pH, Temperature, Ammonia, CL₂ Res, Settleable Solids, BOD, NFR =

pH, mg/L, ° C

JANUARY 2011

INFLUENT								EFFLUENT								AMMONIA				UN-IONIZED		River		Coliform			
Date	pH	Temp	S.S	mg/L	NH3 (mg/L)	BOD	NFR	pH	Temp	D.O.	S.S.	mg/L	NH3 (mg/L)	NTU	CL½ Res	CL½ Res	3x5	BOD	NFR								
1	7	14.1						7.0	8.7	3				86.4	2.3	0.00											
2	7.8	14.4						7.0	9.6	3.9				82.4	1.5	0.00											
3	7.0	13.5		22.0	0.064			7.0	8	4.5		28.0	0.053	83.4	1.5	0.00	<1.8										
4	7.6	14.3		32.0	0.443			7.3	7.5	4.6		20.0	0.113	86.4	1.4	0.00											
5	7.6	13.4		24.0	0.312			7.1	7.6	4.2		20.0	0.052	84.4	1.1	0.00											
6	7.9	14.0		26.0	0.669			7.4	7.6	3.7		18.0	0.090	86.0	1.2	0.00											
7	7.6	14.8	2.5	36.0	0.513	200	150	7.2	7.8	4.1	<0.1	28.0	0.097	88.0	2.0	0.00		22	32								
8	7.5	13.9						7.2	8.4					87.4	3.1	0.00											
9	8.0	14.5						7.1	7.7					78.4	1.6	0.00											
10	8.1	14.9		40.0	1.778			7.0	7.2	3.1		30.0	0.053	74.2	1.6	0.00	<1.8										
11	7.7	14.9		32.0	0.599			7.3	8.4	3.8		20.0	0.090	72.1	1.7	0.00											
12	7.5	14.8		34.0	0.338			6.8	9.8	3.9		24.0	0.038	67.5	0.8	0.00											
13	7.1	14.5		28.0	0.170			6.7	10.3	2.9		26.0	0.035	66.3	2.1	0.00											
14	7.3	15.0	18	30.0	0.220	190.0	170.0	6.9	10.4	4.4	<0.1	28.0	0.055	64.6	0.4	0.00		27	34								
15	8.0	15.2						6.8	11.1	3.7				59.3	1.1	0.00											
16	7.5	14.8						6.8	11.8	4.1				53.5	0.4	0.00											
17	6.6	14.3		12.0	0.017			7.1	12.1	2.5		26.0	0.097	55.3	0.7	0.00											
18	7.4	13.9		28.0	0.229			6.7	11.4	4.5		24.0	0.035	42.8	4.7	0.00	<1.8										
19	7.7	14.5		30.0	0.547			6.8	11.4	3.2		26.0	0.047	63.7	0.2	0.00											
20	7.5	14.7		36.0	0.356			6.8	11.9	4.3		26.0	0.049	49.5	1.5	0.00											
21	7.6	15.4	18.0	30.0	0.449	260	150	7.1	11.0	4.3	<0.1	28.0	0.083	47.0	1.7	0.00		13	15								
22	7.7	15.1						6.9	10.8	4.0					10.2	0.00											
23	7.8	14.8						7.0	10.6	3.9					4.0	0.00											
24	7.5	14.7		32.0	0.316			7.2	11.6	3.1		28.0	0.132	58.3	2.1	0.00	1.8										
25	7.7	14.2		32.0	0.572			Shut Down For CCB Cleaning																			
26	7.5	14.6		32.0	0.315			7.1	12.8	3.7		30.0	0.118	65.7	3.6	0.00											
27	7.2	14.5		24.0	0.139			6.9	11.4	3.5		26.0	0.055	55.3	0.6	0.00											
28	7.3	15.0	5	36.0	0.264	220.0	260.0	6.8	12.7	4.3	<0.1	30.0	0.059	48.9	1.8	0.00		18	29								
29	7.3	14.4						6.7	11.5	3.6					1.1	0.00											
30	7.9	14.8						7.1	11.7	3.3					3.2	0.00											
31	7.3	14.3		34.0	0.240			7.2	12.1	3.8		28.0	0.136	52.3	2.4	0.00	<1.8										
																	MEDIAN										
Average	7.5	14.5	10.9	30.0	0.407	218	183	7.0	10.2	3.8	<0.1	25.7	0.074	67.7	2.1	0.0	<2	20	28								
Maximum	8.1	15.4	18.0	40.0	1.778	260	260	7.4	12.8	4.6	<0.1	30.0	0.136	88	10.2	0.0	<2	27	34								
Minimum	6.6	13.4	2.5	12.0	0.017	190	150	6.7	7.2	2.5	<0.1	18.0	0.035	42.8	0.2	0.0	<2	13	15								

Wastewater Management Facility

Influent & Effluent Testing pH, Temperature, Ammonia, CL₂ Res, Settleable Solids, BOD, NFR = pH, mg/L, ° C

FEBRUARY 2011

INFLUENT								EFFLUENT								River								Coliform		
Date	pH	Temp	S.S	AMMONIA mg/L	UN-IONIZED NH3 (mg/L)	BOD	NFR	pH	Temp	D.O.	S.S.	AMMONIA mg/L	UN-IONIZED NH3 (mg/L)	NTU	CL _{1/2} Res	CL _{1/2} Res	3x5	BOD	NFR							
1	7.5	14.4		36.0	0.351			6.8	11.9	3.6		28.0	0.053	53.5	2.7	0.00										
2	7.8	15.4		44.0	1.055			6.8	11.5	3.6		28.0	0.051	57.0	4.2	0.00										
3	7.9	14.8		40.0	1.090			6.9	11.4	3.3		30.0	0.064	60.2	3.0	0.00										
4	7.7	14.8	15.0	36.0	0.670	230	230	6.9	11.9	3.7	<0.1	26.0	0.058	58.4	1.8	0.00		22	31							
5	7.6	14.9						6.8	11.9	3.3				58.2	2.1	0.00										
6	8.1	14.9						6.8	12.3	2.9				56.9	1.9	0.00										
7	7.6	14.4		38.0	0.529			6.7	12.1	3.6		28.0	0.043	61.1	2.3	0.00	<1.8									
8	7.6	14.3		42.0	0.582			6.7	11.9	4.0		30.0	0.046	71.0	2.6	0.00										
9	7.7	15		32.0	0.603			6.6	11.3	4.3		28.0	0.031	67.9	1.6	0.00										
10	7.7	15.9		44.0	0.829			7.2	11.5	4.3		32.0	0.149	66.2	2.0	0.00										
11	7.9	15.6	20.0	40.0	1.156	160.0	190.0	7.0	10.4	4.2	<0.1	32.0	0.073	59.7	1.5	0.00		19	42							
12	7.8	15.2						7.0	10.7	3.1				62.3	1.5	0.00										
13	7.5	15						7.0	11.3	3.2				63.4	1.7	0.00										
14	7.9	15.0		42.0	1.161			6.8	12	3.2		28.0	0.053	67.8	2.7	0.00	<1.8									
15	7.7	15.0		40.0	0.754			7.0	12.0	4.0		28.0	0.073	56.5	2.6	0.00										
16	7.7	14.3		40.0	0.720			7.0	10.5	4.5		30.0	0.070	76.6	2.8	0.00										
17	7.7	15.0		36.0	0.678			6.7	10.0	4.4		28.0	0.037	71.4	3.1	0.00										
18	7.4	14.3	17.0	30.0	0.251	200	190	7.2	9.4	4.0	<0.1	28.0	0.111	70.5	1.3	0.00		15	22							
19	7.7	14.2						7.0	10.0	4.1				63.4	0.5	0.00										
20	6.8	14.6						6.6	10.7	3.7				64.5	0.4	0.00										
21	7.4	14.4						6.9	10.9	3.5				63.9	0.2	0.00										
22	7.9	14.2		36.0	0.940			6.8	10.5	4.6		30.0	0.051	65.7	3.9	0.00	<1.8									
23	7.2	13.3		32.0	0.171			6.5	9.8	3.4		28.0	0.019	63.8	0.7	0.00										
24	7.4	13.8		36.0	0.293			6.6	10.3	3.6		30.0	0.032	54.0	0.8	0.00										
25	7.3	14.1	15.0	32.0	0.224	220.0	170.0	6.7	10.4	4.2	<0.1	30.0	0.038	58.9	3.7	0.00		21	30							
26	7.2	13.3						6.9	8.5	3.2				57.7	4.1	0.00										
27	7.9	14.1						7.2	9.4	3.8				53.7	2.7	0.00										
28	7.7	14.4		38.0	0.688			6.8	9.9	3.1		30.0	0.048	49.3	1.3	0.00	<1.8									
																	MEDIAN									
Average	7.6	14.6	16.8	37.6	0.671	203	195	6.9	10.9	3.7	<0.1	29.1	0.058	61.9	2.1	0.0	<1.8	19	31							
Maximum	8.1	15.9	20.0	44.0	1.161	230	230	7.2	12.3	4.6	<0.1	32.0	0.149	76.6	4.2	0.0	<1.8	22	42							
Minimum	6.8	13.3	15.0	30.0	0.171	160	170	6.5	8.5	2.9	<0.1	26.0	0.019	49.3	0.2	0.0	<1.8	15	22							

McKinleyville Community Services District
Wastewater Management Facility
Influent & Effluent Testing pH, Temperature, Ammonia, CL₂ Res, Settleable Solids, BOD, NFR =
pH, mg/L, ° C
MARCH 2011

INFLUENT								EFFLUENT								AMMONIA				UN-IONIZED		River		Coliform			
Date	pH	Temp	S.S	mg/L	NH3 (mg/L)	BOD	NFR	pH	Temp	D.O.	S.S.	mg/L	NH3 (mg/L)	NTU	CL/2 Res	CL/2 Res	3x5	BOD	NFR								
1	7.7	14.7		38.0	0.702			6.7	10.4	4		28.0	0.038	44.8	1.0	0.00											
2	7.8	14.3		42.0	0.930			6.6	11.1	3.9		30.0	0.033	43.7	1.3	0.00											
3	8.0	14.0		38.0	1.131			6.6	11	3.6		30.0	0.033	35.3	1.6	0.00											
4	7.5	14.3	20.0	36.0	0.349	270	160	6.7	11	4	<0.1	30.0	0.042	31.5	2.9	0.00		18	21								
5	7.6	14.6						6.7	11.1	3.1				33.1	0.3	0.00											
6	7.6	14.3						6.8	11.1	3.6				30.6	4.1	0.00											
7	7.6	14.5		36.0	0.504			6.6	11.2	3.7		32.0	0.035	30.9	0.4	0.00	14.0										
8	7.7	14.7		34.0	0.628			6.5	11.4	3.5		30.0	0.023	29.3	1.4	0.00											
9	7.4	14.3		34.0	0.284			6.5	11.7	3.6		30.0	0.024	31.4	0.2	0.00											
10	7.7	14.9		34.0	0.636			6.7	12.9	3.6		32.0	0.052	32.9	4.7	0.00											
11	7.5	13.8	19.0	36.0	0.338	180.0	160.0	6.7	12.3	3.9	<0.1	30.0	0.047	31.1	1.4	0.00		17	22								
12	7.5	13.8						6.9	12.8	2.7				29.6	1.0	0.00											
13	7.7	14.5						6.8	13.1	3.2				33.2	2.9	0.00											
14	7.5	14.6		34.0	0.334			6.7	12.4	3.6		32.0	0.050	37.9	3.5	0.00	<1.8										
15	7.5	14.2		30.0	0.290			6.7	13.5	3.3		28.0	0.048	42.6	4.2	0.00											
16	7.5	14.2		32.0	0.308			6.9	12.0	3.3		30.0	0.067	41.8	2.3	0.00											
17	7.6	15.0		30.0	0.433			6.8	12.1	3.2		30.0	0.057	43.0	1.5	0.00											
18	7.6	14.5	14.0	32.0	0.448	210	190	6.8	11.5	3.4	<0.1	30.0	0.054	46.4	3.7	0.00		28	23								
19	7.1	12.5						6.8	10.8	3.6				46.0	2.7	0.00											
20	7.3	13.5						6.8	11.6	3.5				44.7	2.3	0.00											
21	7.3	14.2		30.0	0.210			6.8	11.4	3.5		30.0	0.054	42.8	1.2	0.00	<1.8										
22	7.4	14.4		32.0	0.269			6.6	11.3	2.2		30.0	0.033	40.3	1.4	0.00											
23	7.4	14.1		32.0	0.265			6.6	12.7	3.5		28.0	0.035	41.3	2.1	0.00											
24	7.6	14.8		30.0	0.428			6.9	12.6	3.6		28.0	0.066	42.8	5.1	0.00											
25	7.3	14.8	15.0	30.0	0.218	150.0	110.0	6.6	11.1	4.5	<0.1	28.0	0.031	38.7	4.1	0.00		22	24								
26	7.5	14.6						6.8	11.4	4.1				40.1	3.7	0.00											
27	6.9	13.3						6.8	12.2	4.8				39.2	2.2	0.00											
28	7.5	15.0		32.0	0.329			6.6	11.1	3.4		28.0	0.030	42.7	2.6	0.00	<1.8										
29	7.5	15.1		30.0	0.311			6.6	12.2	3.4		28.0	0.033	42.3	1.7	0.00											
30	7.4	14.8		30.0	0.258			6.6	12.2	3.1		30.0	0.036	45.1	0.7	0.00											
31	7.4	14.9		32.0	0.276			6.7	12.7	3.2		26.0	0.042	44.2	0.6	0.00											
																	MEDIAN										
Average	7.5	14.4	17.0	33.2	0.430	203	155	6.7	11.8	3.5	<0.1	29.5	0.042	38.7	2.2	0.0	<1.8	21	23								
Maximum	8	15.1	20.0	42.0	1.131	270	190	6.9	13.5	4.8	<0.1	32.0	0.067	46.4	5.1	0.0	14	28	24								
Minimum	6.9	12.5	14.0	30.0	0.21	150	110	6.5	10.4	2.2	<0.1	26.0	0.023	29.3	0.2	0.0	<1.8	17	21								

McKinleyville Community Services District
Wastewater Management Facility
Influent & Effluent Testing pH, Temperature, Ammonia, CL₂ Res, Settleable Solids, BOD, NFR =

pH, mg/L, ° C

APRIL 2011

INFLUENT								EFFLUENT								AMMONIA				UN-IONIZED		River		Coliform			
Date	pH	Temp	S.S	mg/L	NH3 (mg/L)	BOD	NFR	pH	Temp	D.O.	S.S.	mg/L	NH3 (mg/L)	NTU	CL ₂ Res	CL ₂ Res	3x5	BOD	NFR								
1	7.5	14.7	13.0	32.0	0.316	150	130	6.6	13.5	3.6	<0.1	28.0	0.037	44.5	1.3	0.00		22	30								
2	7	14.0						6.9	13	3.3				48.2	0.2	0.00											
3	7.1	13.4						6.8	12.5	3.5				47.3	0.4	0.00											
4	7.2	14.1		28.0	0.158			6.4	13.2	3.2		26.0	0.013	43.6	0.7	0.00											
5	7.5	14.6		32.0	0.313			6.8	13.1	3.7		20.0	0.041	45.2	3.3	0.00	<1.8										
6	7.9	14.8		28.0	0.763			6.7	13.4	3.1		20.0	0.034	43.3	2.0	0.00											
7	7.4	15		32.0	0.278			6.7	12.7	3.6		28.0	0.045	45.4	3.7	0.00											
8	7.6	14.1	19.0	26.0	0.356	180	190	6.9	13.3	4.3	<0.1	20.0	0.050	51.8	2.0	0.00		19	33								
9	6.9	14						6.8	12.7	3.6				46.1	2.5	0.00											
10	6.9	13.9						6.9	13	3.4				43.0	2.2	0.00											
11	7.1	14.3		28.0	0.123			7.0	13.6	3.7		24.0	0.070	47.1	3.4	0.00	<1.8										
12	7.6	14.7		30.0	0.425			6.7	13.8	4.2		20.0	0.035	45.5	3.6	0.00											
13	7.4	15.3		30.0	0.268			7.2	13.6	4.2		20.0	0.109	50.4	4.1	0.00											
14	7.5	14.8		30.0	0.298			7.1	13.6	3.8		20.0	0.084	49.0	3.5	0.00											
15	7.7	15.3	18.0	30.0	0.579	210	220	7.2	14.1	3.6	<0.1	20.0	0.113	49.9	4.2	0.00		28	47								
16	7.5	14.3						6.9	14.0	4.1				49.2	1.8	0.00											
17	7.4	13.9						6.8	14.1	4.0				50.7	0.3	0.00											
18	7.2	14.8		28.0	0.165			6.9	13.4	3.9		20.0	0.049	52.9	3.2	0.00	<1.8										
19	7.4	14.9		30.0	0.259			7.1	13.3	3.8		18.0	0.073	50.7	1.1	0.00											
20	7.9	14.8		28.0	0.763			6.7	14.5	4.1		20.0	0.037	49.6	0.6	0.00											
21	7.8	15.2		26.0	0.613			7.0	13.7	4.3		18.0	0.053	54.8	2.7	0.00											
22	7.4	14.9	23.0	32.0	0.276	210	200	6.9	14.0	3.8	<0.1	20.0	0.052	54.7	3.8	0.00		24	38								
23	7.7	14.7						6.7	13.9	3.1				56.7	2.2	0.00											
24	8.0	15.2						6.6	13.9	3.3				58.9	2.1	0.00											
25	7.1	14.6		20.0	0.090			6.8	14.4	3.8		16.0	0.030	60.8	1.3	0.00	<1.8										
26	7.2	14.9		22.0	0.130			7.0	14.3	3.8		16.0	0.049	62.4	1.7	0.00											
27	7.6	14.3		20.0	0.276			7.0	14.1	4.1		16.0	0.048	65.5	1.2	0.00											
28	7.4	14.6		20.0	0.170			7.1	14.6	3.7		16.0	0.072	65.9	1.3	0.00											
29	7.6	15.2	16.0	20.0	0.294	240	350	7.1	14.7	3.9	<0.1	14.0	0.063	71.2	2.3	0.00		24	40								
30															2.7	0.00											
31																											
																		MEDIAN									
Average	7.4	14.6	17.8	27.2	0.329	198	218	6.9	13.7	3.7	<0.1	20.0	0.055	51.9	2.2	0.0	<1.8		23	38							
Maximum	8	15.3	23.0	32.0	0.763	240	350	7.2	14.7	4.3	<0.1	28.0	0.113	71.2	4.2	0.0	<1.8		28	47							
Minimum	6.9	13.4	13.0	20.0	0.09	150	130	6.4	12.5	3.1	<0.1	14.0	0.013	43	0.2	0.0	<1.8		19	30							

McKinleyville Community Services District
Wastewater Management Facility
Influent & Effluent Testing pH, Temperature, Ammonia, CL₂ Res, Settleable Solids, BOD, NFR = pH, mg/L, ° C MAY 2011

INFLUENT								EFFLUENT								River		Coliform		
Date	pH	Temp	S.S	AMMONIA mg/L	UN-IONIZED NH3 (mg/L)	BOD	NFR	pH	Temp	D.O.	S.S.	AMMONIA mg/L	UN-IONIZED NH3 (mg/L)	NTU	CL ₂ Res	CL ₂ Res	3x5	BOD	NFR	
1															2.8	0.00				
2	7.9	15.1		22.0	0.557			7.3	14.9	3.8		16.0	0.073	73.2	2.1	0.00	<1.8			
3	7.6	15.3		32.0	0.474			7.1	15.1	3.6		20.0	0.093	81.1	2.9	0.00				
4	8.0	15.1		28.0	0.903															
5	8	15.3		44.0	1.441			7.1	15.8	6.1		20.0	0.099	92.3	4.9	0.00				
6	7.7	15.1	22	40.0	0.760	260.0	410.0	6.6	14.6	4.4	<0.1	20.0	0.029	84.0	0.2	0.00		19	44	
7	7.6	14.6						7.1	14.4	4.4				96.0	3.5	0.00				
8	7.4	14.3						7.1	14.4	4.1				95.8	3.8	0.00				
9	7.8	15.1		36.0	0.843			6.7	14.3	4.2		20.0	0.037	95.3	2.1	0.00	<1.8			
10	7.9	15.6		36.0	1.041			6.7	14.7	4.3		18.0	0.034	92.4	2.0	0.00				
11	8	15.6		44.0	1.473			6.9	15.5	5.5		22.0	0.065	90.3	1.1	0.00				
12	7.9	15.5		38.0	1.091			6.7	15.5	4.1		20.0	0.040	95.3	2.6	0.00				
13	8	16.3	19	30.0	1.077	200.0	210.0	7.1	15.4	3.7	<0.1	20.0	0.095	93.1	2.9	0.00		15	42	
14								6.7	15.5	1.9					2.4	0.00				
15																				
16	7.7	15.3		36.0	0.502			7.0	15.2	4.4		18.0	0.060	90.5	2.4		<1.8			
17	8.2	16.6		42.0	2.700			6.5	13.7	4.5		22.0	0.021	110.0	3.6					
18	8.0	16.6		32.0	1.150			6.9	14.5	3.7		16.0	0.044	118.0	4.4					
19	7.8	16.0		28.0	0.703			6.7	14.6	3.8		20.0	0.038	119.0	2.7					
20	7.9	16.6	20	30.0	0.932	270.0	310.0	7.1	15.1	3.9	<0.1	18.0	0.084	118.0	2.8			19	28	
21																				
22																				
23	7.6	15.9		34.0	0.532			6.5	15.2	2.4		20.0	0.021	127.0	3.3		<1.8			
24	7.7	16.1		36.0	0.741			6.7	15.5	4.2		18.0	0.036	128.0	3.5					
25	7.9	16.3		38.0	1.156			6.6	15.1	4.3		20.0	0.030	127.0	4.1					
26	8.1	17.3		40.0	2.105			6.6	15.6	4.5		18.0	0.028	133.0	4.3					
27	8.0	16.4	18	38.0	1.347	240	210	6.7	15.5	4.3	<0.1	22.0	0.044	136.0	4.4			19	33	
28																				
29																				
30																				
31	8.1	16.9		32.0	1.637			6.9	15.5	4.0		20.0	0.049	113.0	4.0		<1.8			
																	MEDIAN			
Average	7.9	15.8	19.8	35.0	1.103	243	285	6.8	15.0	4.1	<0.1	19.4	0.051	104.9	3.0	0.0	<1.8	18	37	
Maximum	8.2	17.3	22.0	44.0	2.700	270	410	7.3	15.8	6.1	<0.1	22.0	0.099	136	4.9	0.0	<1.8	19	44	
Minimum	7.4	14.3	18.0	22.0	0.474	200	210	6.5	13.7	1.9	<0.1	16.0	0.021	73.2	0.2	0.0	<1.8	15	28	

McKinleyville Community Services District
Wastewater Management Facility
Influent & Effluent Testing pH, Temperature, Ammonia, CL₂ Res, Settleable Solids, BOD, NFR =

pH, mg/L, ° C

AUGUST 2011

INFLUENT								EFFLUENT								River		Coliform		
Date	pH	Temp	S.S	AMMONIA mg/L	UN-IONIZED NH3 (mg/L)	BOD	NFR	pH	Temp	D.O.	S.S.	AMMONIA mg/L	UN-IONIZED NH3 (mg/L)	NTU	CL ₂ Res	CL ₂ Res	3x5	BOD	NFR	
1	8.1	19.5		46.0	2.827			7.0	17.9	4.1		28.0	0.114	120.0	1.6		4.5			
2	7.7	18.4		34.0	0.824			7.0	17.4	3.8		30.0	0.118	137.0	9.9					
3	7.9	19.1		40.0	1.487			6.8	17.3	4.6		28.0	0.079	126.0	2.6					
4	8.0	19.7		46.0	1.917			6.7	17.8	3.3		30.0	0.072	115.0	0.4					
5	7.7	18.8	17.0	44.0	1.095	300.0	610.0	6.7	17.9	2.6	<0.1	34.0	0.082	106.0	0.5			22	26	
6																				
7																				
8	8.0	19.5		44.0	1.948			6.6	17.4	3.2		32.0	0.057	78.7	0.8		<1.8			
9	7.7	18.7		38.0	0.939			6.6	17.4	3.1		32.0	0.057	79.4	0.9					
10	7.4	18.3		34.0	0.384			6.6	17.6	4.0		30.0	0.054	77.2	1.4					
11	7.7	18.8		40.0	0.996			6.8	17.8	3.7		30.0	0.088	74.5	1.4					
12	8.2	19.3	17.0	44.0	3.414	450	150	7.0	17.6	4.2	<0.1	34.0	0.135	73.4	1.4			14	22	
13																				
14																				
15	7.9	19.2		40.0	1.498			6.8	17.7	3.7		32.0	0.093	71.8	0.7					
16	7.7	19.1		36.0	0.915			6.7	18.3	3.4		32.0	0.079	69.8	1.8		<1.8			
17	7.6	18.9		40.0	0.770			6.9	18.0	4.1		34.0	0.120	66.0	3.4					
18	8.0	18.6		40.0	1.660			6.7	17.6	3.1		36.0	0.084	65.3	3.7					
19	7.7	19.4	25.0	36.0	0.937	290.0	220.0	6.7	17.7	4.3	<0.1	28.0	0.066	66.7	2.7			13	20	
20																				
21																				
22	8.1	20.3		48.0	3.113			6.7	17.7	2.7		30.0	0.071	60.2	1.6		<1.8			
23	8.1	19.5		42.0	2.581			6.8	17.5	3.5		32.0	0.092	64.0	3.3					
24	7.6	19.4		40.0	0.803			6.8	18.5	3.4		34.0	0.105	71.6	2.4					
25	8.4	20.2		48.0	5.672			6.9	18.4	3.9		34.0	0.124	71.2	2.8					
26	7.4	18.8	14.0	36.0	0.418	320	250	6.6	18.1	2.7	<0.1	34.0	0.064	73.0	2.6			10	13	
27																				
28																				
29	7.8	18.8		36.0	1.103			6.9	17.7	3.5		32.0	0.111	65.6	1.9		<1.8			
30	8.3	19.8		44.0	4.300			6.7	17.7	4.0		34.0	0.080	66.3	3.1					
31	8.1	20.7		44.0	2.931			6.7	17.8	3.4		32.0	0.076	77.6	5.3					
																	MEDIAN			
Average	7.9	19.3	18.3	40.9	1.849	340	308	6.8	17.8	3.6	<0.1	31.8	0.088	81.6	2.4	0.0	<1.8	15	20	
Maximum	8.4	20.7	25.0	48.0	5.672	450	610	7.0	18.5	4.6	<0.1	36.0	0.135	137	9.9	0.0	5	22	26	
Minimum	7.4	18.3	14.0	34.0	0.384	290	150	6.6	17.3	2.6	<0.1	28.0	0.054	60.2	0.4	0.0	<1.8	10	13	

McKinleyville Community Services District
Wastewater Management Facility
Influent & Effluent Testing pH, Temperature, Ammonia, CL₂ Res, Settleable Solids, BOD, NFR =

pH, mg/L, ° C

SEPTEMBER 2011

INFLUENT								EFFLUENT								AMMONIA		UN-IONIZED		River		Coliform		
Date	pH	Temp	S.S	mg/L	NH3 (mg/L)	BOD	NFR	pH	Temp	D.O.	S.S.	mg/L	NH3 (mg/L)	NTU	CL ₂ Res	CL ₂ Res	3x5	BOD	NFR					
1	7.9	18.9		40.0	1.465			6.7	17.4	3.7		32.0	0.074	75.7	5.4									
2	7.7	18.8	15.0	44.0	1.095	260	200.0	6.7	17	3.1	<0.1	36.0	0.081	78.1	6.1			21	15					
3																								
4																								
5																								
6	7.7	18.2		34.0	0.813			6.7	16.3	3.7		36.0	0.076	51.0	6.2		<1.8							
7	8.5	19.9		48.0	6.410			6.7	16.2	4.1		34.0	0.071	80.8	8.9									
8	8.2	19.2		44.0	3.391			6.8	16.2	3.5		36.0	0.093	91.2	5.6									
9	7.9	18.8	17.0	46.0	1.673	320	230	6.9	16.4	4.2	<0.1	36.0	0.113	92.9	4.4			17	14					
10																								
11																								
12	7.7	19		40.0	1.008			6.6	16.7	3.8		32.0	0.054	74.2	2.3		<1.8							
13	8.3	20.9		48.0	5.027			6.6	17.1	4.1		32.0	0.056	84.6	0.9									
14	8.1	20.1		44.0	2.816			6.7	17.4	3.8		28.0	0.065	92.4	1.9									
15	7.7	19.1		40.0	1.017			7.0	17.2	4.3		32.0	0.124	93.7	3.3									
16	8.1	19.7	25.0	42.0	2.616	270.0	240.0	7.2	16.8	4.2	<0.1	28.0	0.194	94.0	3.9			16	17					
17																								
18																								
19	7.9	19.0		40.0	1.475			6.8	16.4	2.9		30.0	0.079	88.4	6.1		<1.8							
20	7.8	18.6		42.0	1.269			6.8	16.2	4.2		36.0	0.093	110.0	3.8									
21	7.9	19.0		40.0	1.475			6.8	16.2	3.3		36.0	0.093	113.0	3.0									
22	7.8	19.1		42.0	1.314			6.9	16.6	4.0		34.0	0.108	114.0	2.6									
23	7.9	19.1	20	44.0	1.635	240	190	6.9	17.5	3.5	<0.1	36.0	0.122	119.0	1.3			15	20					
24																								
25																								
26	8.2	20.4		44.0	3.670			6.9	16.8	2.9		34.0	0.110	97.9	1.6		<1.8							
27	7.9	19.2		34.0	1.270			6.7	17.1	3.1		30.0	0.068	130.0	0.8									
28	8.2	20.6		44.0	3.718			6.9	17.1	4.5		30.0	0.052	128.0	2.2									
29	8.1	20.6		44.0	2.912			7.0	17.2	3.9		30.0	0.116	128.0	2.3									
30	8.2	19.9	25.0	44.0	3.552	220.0	210.0	6.9	17.0	4.1	<0.1	36.0	0.118	133.0	1.4			15	16					
																	MEDIAN							
Average	8.0	19.4	20.4	42.3	2.363	262	214	6.8	16.8	3.8	<0.1	33.0	0.093	98.6	3.5	0.0	<1.8	17	16					
Maximum	8.5	20.9	25.0	48.0	6.410	320	240	7.2	17.5	4.5	<0.1	36.0	0.194	133	8.9	0.0	<1.8	21	20					
Minimum	7.7	18.2	15.0	34.0	0.813	220	190	6.6	16.2	2.9	<0.1	28.0	0.052	51	0.8	0.0	<1.8	15	14					

McKinleyville Community Services District
Wastewater Management Facility
Influent & Effluent Testing pH, Temperature, Ammonia, CL₂ Res, Settleable Solids, BOD, NFR =

pH, mg/L, ° C

OCTOBER 2011

INFLUENT								EFFLUENT								AMMONIA		UN-IONIZED		River		Coliform	
Date	pH	Temp	S.S	mg/L	NH3 (mg/L)	BOD	NFR	pH	Temp	D.O.	S.S.	mg/L	NH3 (mg/L)	NTU	CL ₂ Res	CL ₂ Res	3x5	BOD	NFR				
1																							
2																							
3	8.2	19.8		48.0	3.850			6.9	16.9	4.6		34.0	0.110	116.0	4.4		<1.8						
4	8.1	18.8		38.0	2.224			6.9	16.1	3.7		34.0	0.104	124.0	1.1								
5	7.5	17.4		34.0	0.418			6.9	15.5	3.9		34.0	0.099	129.0	3.7								
6	7.7	16.8		44.0	0.953			7.1	15.1	4.2		28.0	0.131	133.0	5.0								
7	8.2	19.2	18	44.0	3.391	250	280	6.8	14.5	4.8	<0.1	32.0	0.073	140.0	4.7			14	15				
8																							
9																							
10																							
11	7.6	18.7		30.0	0.571			6.9	16.4	4.4		22.0	0.069	131.0	0.5		<1.8						
12	7.8	19		36.0	1.118			7.0	15.7	3.6		26.0	0.089	140.0	3.3								
13	8.1	19.3		40.0	2.425			7.0	15.6	4.1		26.0	0.089	156.0	5.3								
14	7.9	18.6	25	40.0	1.435	310.0	350.0	6.9	16.1	4.4	<0.1	30.0	0.092	158.0	3.2			19	24				
15																							
16																							
17	7.9	19.4		40.0	1.519			7.0	16.3	4.4		26.0	0.093	143.0	2.2		<1.8						
18	7.7	19.0		32.0	0.807			7.0	15.8	4.2		26.0	0.090	151.0	2.2								
19	7.9	19.0		40.0	1.475																		
20	8.3	19.4		46.0	4.381			6.9	15.9	6.1		28.0	0.078	146.0	1.1								
21	8.2	18.7	22.0	44.0	3.276	270	360	6.9	15.9	4.3	<0.1	22.0	0.067	153.0	2.8			31	17				
22																							
23																							
24	7.7	18.6		32.0	0.786			7.1	15.3	3.9		22.0	0.104	158.0	4.3		<1.8						
25	7.8	18.2		36.0	1.057			7.1	14.3	4.5		24.0	0.106	168.0	4.7								
26	7.6	17.7		32.0	0.570			7.0	13.8	4.5		26.0	0.077	178.0	5.1								
27	7.8	18.0		32.0	0.929			7.2	13.4	4.3		26.0	0.140	179.0	3.5								
28	8.3	18.0	32	48.0	4.143	250.0	250.0	7.3	13.7	3.9	<0.1	20.0	0.136	183.0	3.6			18	30				
29																							
30																							
31	8.4	19.2		46.0	5.097			7.0	14.4	4.8		24.0	0.075	172.0	3.0		<1.8						
																	MEDIAN						
Average	7.9	18.6	24.3	39.1	2.021	270	310	7.0	15.3	4.3	<0.1	26.8	0.096	150.4	3.4	0.0	<1.8	21	22				
Maximum	8.4	19.8	32.0	48.0	5.097	310	360	7.3	16.9	6.1	<0.1	34.0	0.140	183	5.3	0.0	<1.8	31	30				
Minimum	7.5	16.8	18.0	30.0	0.418	250	250	6.8	13.4	3.6	<0.1	20.0	0.067	116	0.5	0.0	<1.8	14	15				

McKinleyville Community Services District
Wastewater Management Facility
Influent & Effluent Testing pH, Temperature, Ammonia, CL₂ Res, Settleable Solids, BOD, NFR =

pH, mg/L, ° C

NOVEMBER 2011

INFLUENT								EFFLUENT								AMMONIA		UN-IONIZED		River		Coliform		BOD	NFR
Date	pH	Temp	S.S	mg/L	NH3 (mg/L)	BOD	NFR	pH	Temp	D.O.	S.S.	mg/L	NH3 (mg/L)	NTU	CL ₂ Res	CL ₂ Res	3x5								
1	7.7	16.4		40.0	0.842			7.1	13	3.9		30.0	0.120	182.0	3.0										
2	7.6	16.7		40.0	0.664			7.1	13	4.9		28.0	0.112	175.0	2.9										
3	7.7	17.9		40.0	0.937			7.0	13.1	4.4		24.0	0.068	178.0	4.1										
4	7.9	17.4	27.0	36.0	1.184	260	220	7.3	12.3	4.5	<0.1	28.0	0.170	174.0	1.5				21	43					
5																									
6																									
7	8.1	16.9		44.0	2.250			7.3	11.6	4.4		28.0	0.167	157.0	4.8			<1.8							
8	8.4	18.3		42.0	4.372			6.9	11.2	3.6		26.0	0.055	167.0	3.7										
9	8.4	18.3		46.0	4.787			7.6	11.2	3.5		30.0	0.329	155.0	2.7										
10	8.1	17.3	25	40.0	2.105	260.0	210.0	7.0	11.4	3.8	<0.1	28.0	0.070	160.0	2.2				28	35					
11																									
12																									
13																									
14	7.9	17.4		44.0	1.448			7.0	11.6	3.6		28.0	0.071	137.0	2.5			<1.8							
15	8.1	16.2		36.0	1.754			7.1	10.8	4.0		30.0	0.101	137.0	1.2										
16	8	17.5		44.0	1.687			6.9	11.9	4.0		30.0	0.067	131.0	0.7										
17	8.5	18.3		40.0	4.798			6.9	12.4	3.7		32.0	0.074	124.0	1.9										
18	8.4	17.5	25.0	46.0	4.530	230	190	6.9	11.9	3.2	<0.1	34.0	0.076	122.0	1.1				24	42					
19																									
20																									
21	7.9	16.6		44.0	1.368			7.0	11.0	3.0		34.0	0.082	119.0	3.4			<1.8							
22	8.0	17.2		44.0	1.651			6.9	11.4	3.7		32.0	0.069	124.0	1.9										
23	8.0	17.9	24	46.0	3.944	270	280	6.9	12.0	3.4	<0.1	32.0	0.076	125.0	1.6				25	34					
24																									
25																									
26																									
27																									
28	8.0	17.0		44.0	1.626			6.9	11.3	3.9		32.0	0.068	100.0	2.5			<1.8							
29	8.1	16.7		44.0	1.593			6.8	11.3	3.1		32.0	0.057	98.9	0.2										
30	8.3	16.7		40.0	3.160			6.9	10.7	3.4		32.0	0.065	94.8	1.1										
31																									
																		MEDIAN							
Average	8.1	17.3	25.3	42.1	2.353	255	225	7.0	11.7	3.8	<0.1	30.0	0.100	140.0	2.3	0.0	<1.8		25	39					
Maximum	8.5	18.3	27.0	46.0	4.798	270	280	7.6	13.1	4.9	<0.1	34.0	0.329	182	4.8	0.0	<1.8		28	43					
Minimum	7.6	16.2	24.0	36.0	0.664	230	190	6.8	10.7	3	<0.1	24.0	0.055	94.8	0.2	0.0	<1.8		21	34					

McKinleyville Community Services District
Wastewater Management Facility
Influent & Effluent Testing pH, Temperature, Ammonia, CL₂ Res, Settleable Solids, BOD, NFR =

pH, mg/L, ° C

DECEMBER 2011

INFLUENT								EFFLUENT								AMMONIA		UN-IONIZED		River		Coliform	
Date	pH	Temp	S.S	mg/L	NH3 (mg/L)	BOD	NFR	pH	Temp	D.O.	S.S.	mg/L	NH3 (mg/L)	NTU	CL ₂ Res	CL ₂ Res	3x5	BOD	NFR				
1	7.9	15.5		44.0	1.263			6.8	10.1	3.9		30.0	0.049	97.3	1.0								
2	7.9	15.1	22.0	42.0	1.169	400	490	7.2	11	4.5	<0.1	24.0	0.107	95.8	2.2			17	31				
3																							
4																							
5	7.7	15.6		34.0	0.673			6.9	8.7	3.8		30.0	0.052	96.5	5.1		<1.8						
6	8.5	16.8		48.0	5.195			7.0	8.5	3.5		36.0	0.071	96.6	4.9								
7	8	14.9		46.0	1.463			7.1	8.8	3.7		36.0	0.104	97.6	2.7								
8	7.9	15.3		40.0	1.131			7.0	8.2	3.4		34.0	0.065	101.0	2.6								
9	7.9	14.6	20.0	46.0	1.236	300	250	7.1	7.7	4.4	<0.1	34.0	0.090	106.0	3.0			26	42				
10																							
11																							
12	7.7	15.1		40.0	0.760			7.1	7.9	3.7		34.0	0.091	99.4	4.3		<1.8						
13	8	14.9		42.0	1.336			7.3	7.6	3.7		30.0	0.126	98.5	1.2								
14	8.1	15.6		42.0	1.963			7.2	8.8	3.8		34.0	0.129	98.4	0.6								
15	8.1	17.2		40.0	2.090			7.2	9.8	3.9		30.0	0.123	102.0	2.2								
16	8.1	15.3	15.0	40.0	1.830	250	240	7.2	9.8	3.5	<0.1	30.0	0.123	99.9	1.4			19	46				
17																							
18																							
19	8.1	15.8		44.0	2.085			7.3	8.4	3.8		30.0	0.135	93.7	3.6		<1.8						
20	7.0	14.1		32.0	0.097			7.1	8.2	3.5		32.0	0.088	92.9	1.0								
21	7.9	15.3		38.0	1.075			7.2	9.6	3.3		32.0	0.129	96.2	1.2								
22	8.2	15.6	32.0	34.0	2.639	350	320	7.4	8.3	4.3	<0.1	34.0	0.180	102.0	9.5			31	40				
23																							
24																							
25																							
26																							
27	7.6	15.4		40.0	0.599			7.0	8.5	3.2		32.0	0.064	94.8	2.5		<1.8						
28	7.6	14.9		42.0	0.603			7.0	9.4	2.9		36.0	0.077	102.0	0.5								
29	7.7	14.9		40.0	0.749	280	210	6.7	10.5	3.3		34.0	0.047	108.0	0.8			32	46				
30	7.8	14.9	15.0	34.0	0.785			6.7	11.2	3.5	<0.1	32.0	0.047	106.0	2.3								
31																							
																	MEDIAN						
Average	7.9	15.3	20.8	40.4	1.437	316	302	7.1	9.1	3.7	<0.1	32.2	0.095	99.2	2.6	0.0	<1.8	25	41				
Maximum	8.5	17.2	32.0	48.0	5.195	400	490	7.4	11.2	4.5	<0.1	36.0	0.180	108	9.5	0.0	<1.8	32	46				
Minimum	7	14.1	15.0	32.0	0.097	250	210	6.7	7.6	2.9	<0.1	24.0	0.047	92.9	0.5	0.0	<1.8	17	31				

Waste Water Management Facility 30 Day Average BOD & TSS Work Sheet 2011

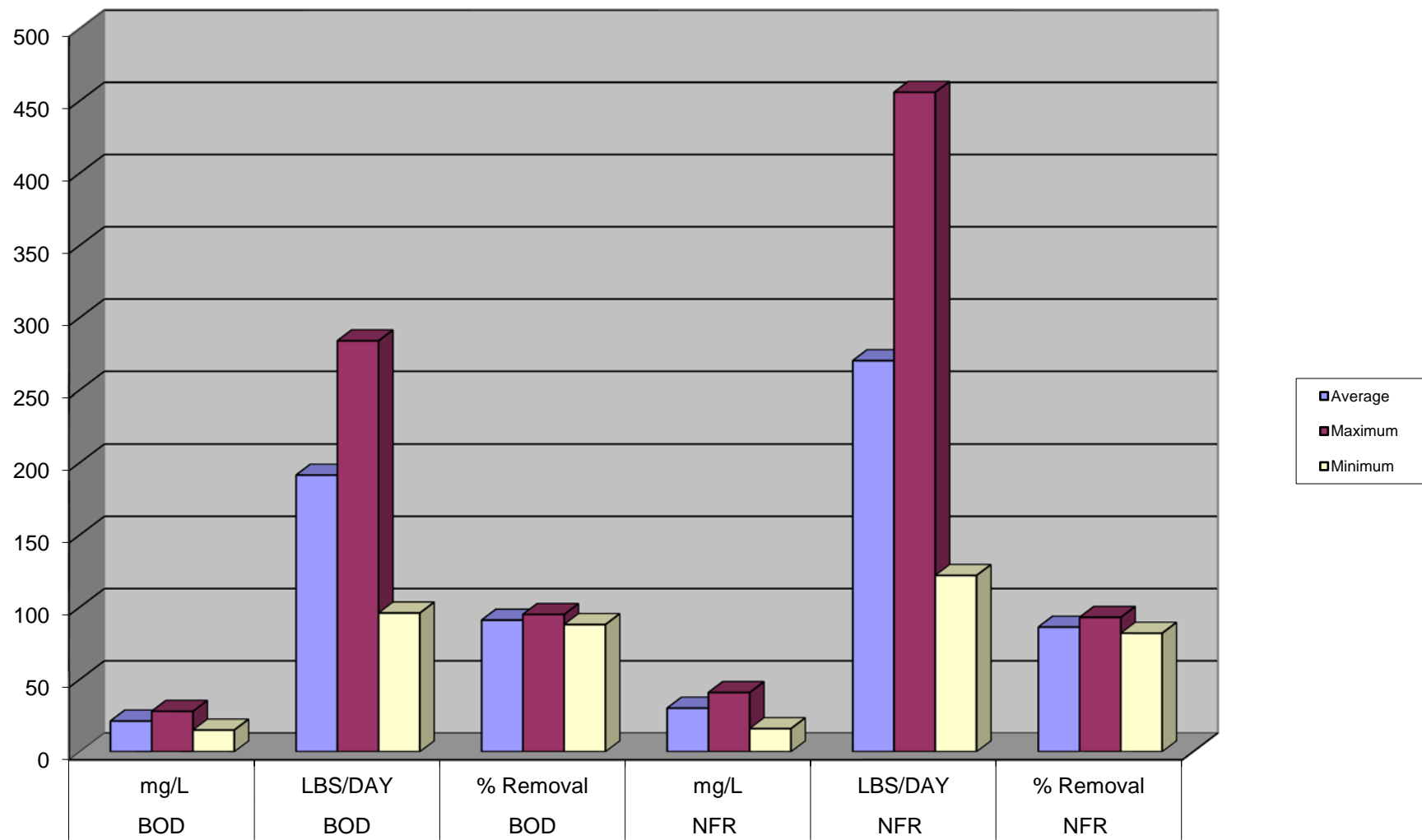
DATE	Influent	Effluent	INF BOD	EFF BOD	INF TSS	EFF TSS	BOD	BOD	BOD	TSS	TSS	TSS
							mg/L	lbs/day	% Removal	mg/L	lbs/day	% Removal
6/3/2011	0.966	0.966	260	31	230	21	31	250	88	21	169	91
6/10/2011	0.934	1.206	320	30	260	32	30	302	91	32	322	88
6/17/2011	0.923	1.091	260	30	230	34	30	273	88	34	309	85
6/24/2011	0.974	0.920	260	22	200	26	22	169	92	26	199	87
							28	248	90	28	250	88

Monthly Avg.

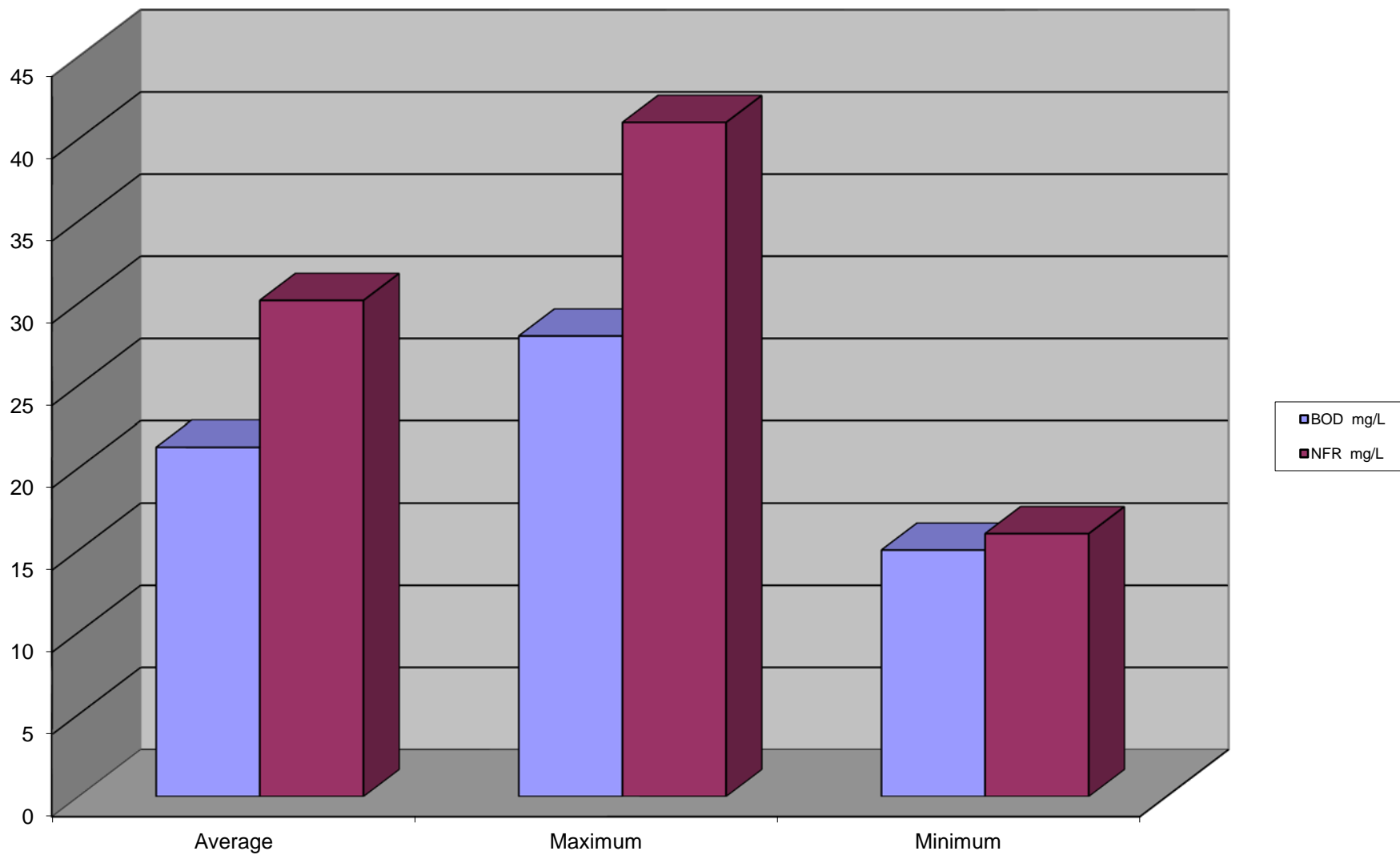
Monthly Avg.Monthly Avg.Monthly Avg.Monthly Avg.Monthly Avg.Monthly Avg.

2011 BOD & NFR 30 Day Average Average, Maximum and Minimum Totals						
Date	BOD mg/L	BOD LBS/DAY	BOD % Removal	NFR mg/L	NFR LBS/DAY	NFR % Removal
January	20	227	90	28	315	84
February	19	221	90	31	362	84
March	21	242	89	23	257	85
April	23	284	88	38	456	82
May	18	126	93	37	275	86
June	28	248	90	28	250	88
July	23	120	90	39	201	82
August	15	96	95	20	130	92
September	17	123	94	16	122	92
October	21	163	92	22	167	93
November	25	226	90	39	350	82
December	25	221	92	41	358	85
Average	21	191	91	30	270	86
Maximum	28	284	95	41	456	93
Minimum	15	96	88	16	122	82

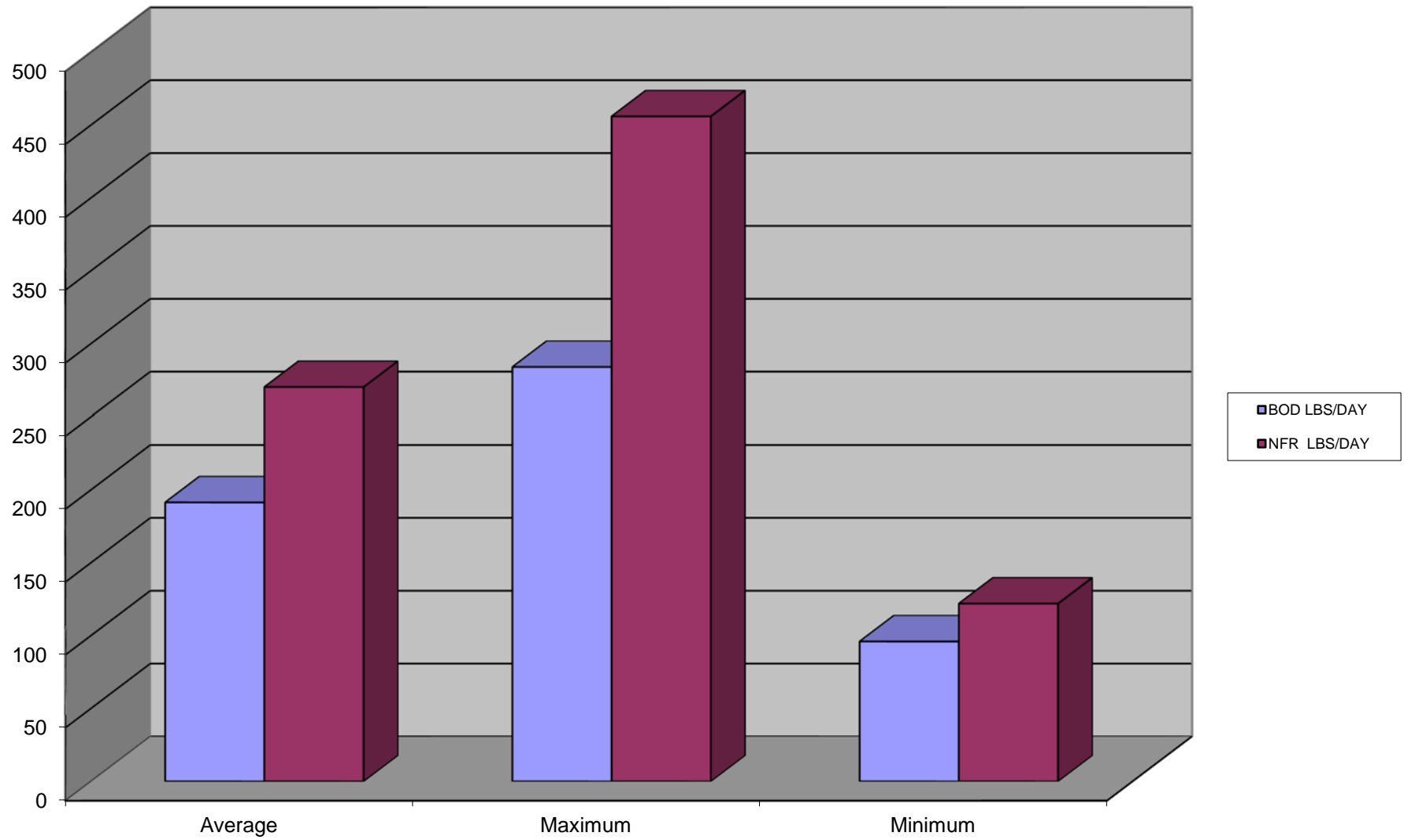
30 Day BOD & NFR
Maximum, Minimum, and Average



BOD & NFR 30 DAY AVERAGE mg/L



BOD & NFR 30 DAY AVERAGE LBS/DAY



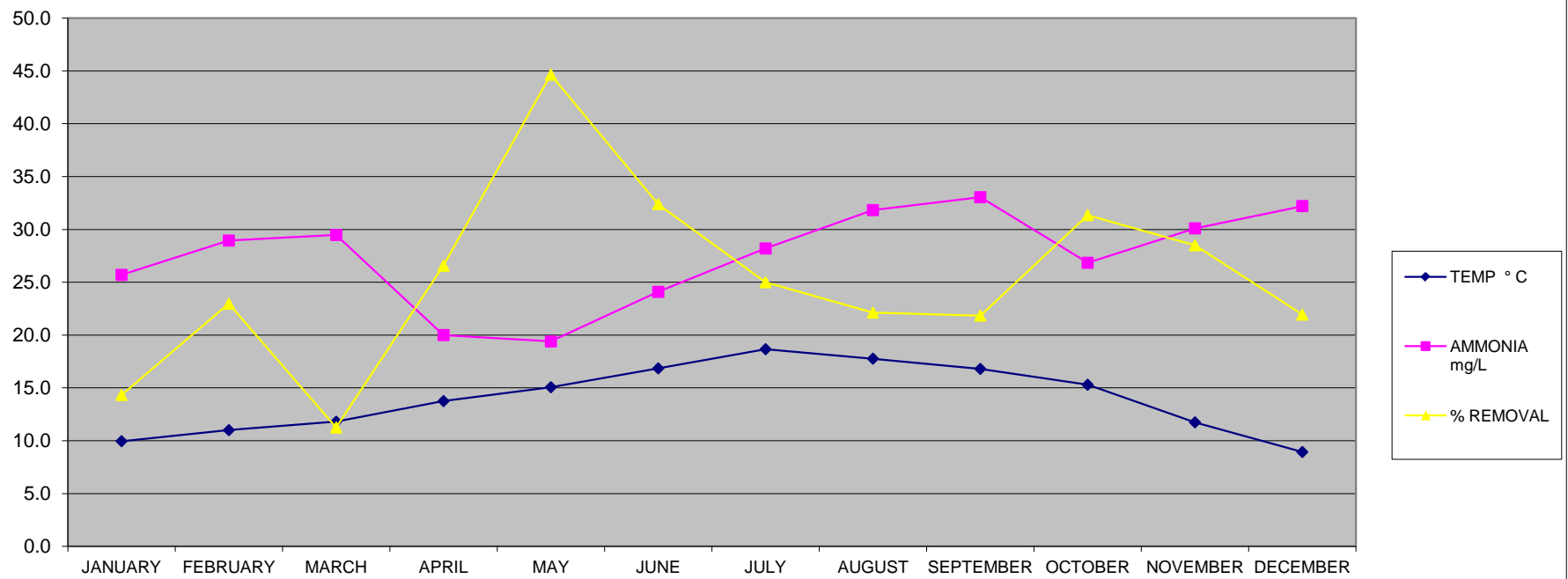
McKinleyville Community Services District
Wastewater Management Facility
2011 Influent, Terminal Pond, and Effluent BOD

MONTH		INFLUENT	EFFLUENT	POND 4	POND 5
		BOD	BOD	BOD	BOD
January	1/7/2010	200	22		35
	1/14/2010	190	27		34
	1/21/2010	260	13		33
	1/28/2010	220	18	33	
February	2/4/2011	230	22	35	
	2/11/2011	160	19		17
	2/18/2011	200	15		29
	2/25/2011	220	21		34
March	3/4/2011	270	18		22
	3/11/2011	180	17	30	
	3/18/2011	210	28	33	
	3/25/2011	150	22	31	
April	4/1/2011	150	22	32	
	4/8/2011	180	19	30	
	4/15/2011	210	28	31	
	4/22/2011	210	24	34	
May	4/29/2011	240	24	50	
	5/6/2011	260	19	50	
	5/13/2011	200	15	66	
	5/20/2011	270	19		52
June	5/27/2011	2400	19		56
	6/3/2011	260	31		70
	6/10/2011	320	30		73
	6/17/2011	260	30		64
July	6/24/2011	260	22		51
	7/1/2011	260	25		38
	7/8/2011	260	18		60
	7/15/2011	230	19		60
August	7/22/2011	220	40	79	
	7/29/2011	290	14		37
	8/5/2011	300	22		40
	8/12/2011	450	14		36
September	8/19/2011	290	13		53
	8/26/2011	320	10		42
	9/2/2011	260	21		48
	9/9/2011	320	17		60
October	9/16/2011	270	16		43
	9/23/2011	240	15		27
	9/30/2011	220	15		38
	10/7/2011	250	14		34
November	10/14/2011	310	19		42
	10/21/2011	270	31		44
	10/28/2011	250	18		53
	11/4/2011	260	21		39
December	11/10/2011	260	28		50
	11/18/2011	230	24		47
	11/22/2011	270	25		36
	12/2/2011	400	17		31
December	12/9/2011	300	26		33
	12/16/2011	250	19		44
	12/16/2011	350	31		44
Average		295	21	41	43
Maximum		2400	40	79	73
Minimum		150	10	30	17

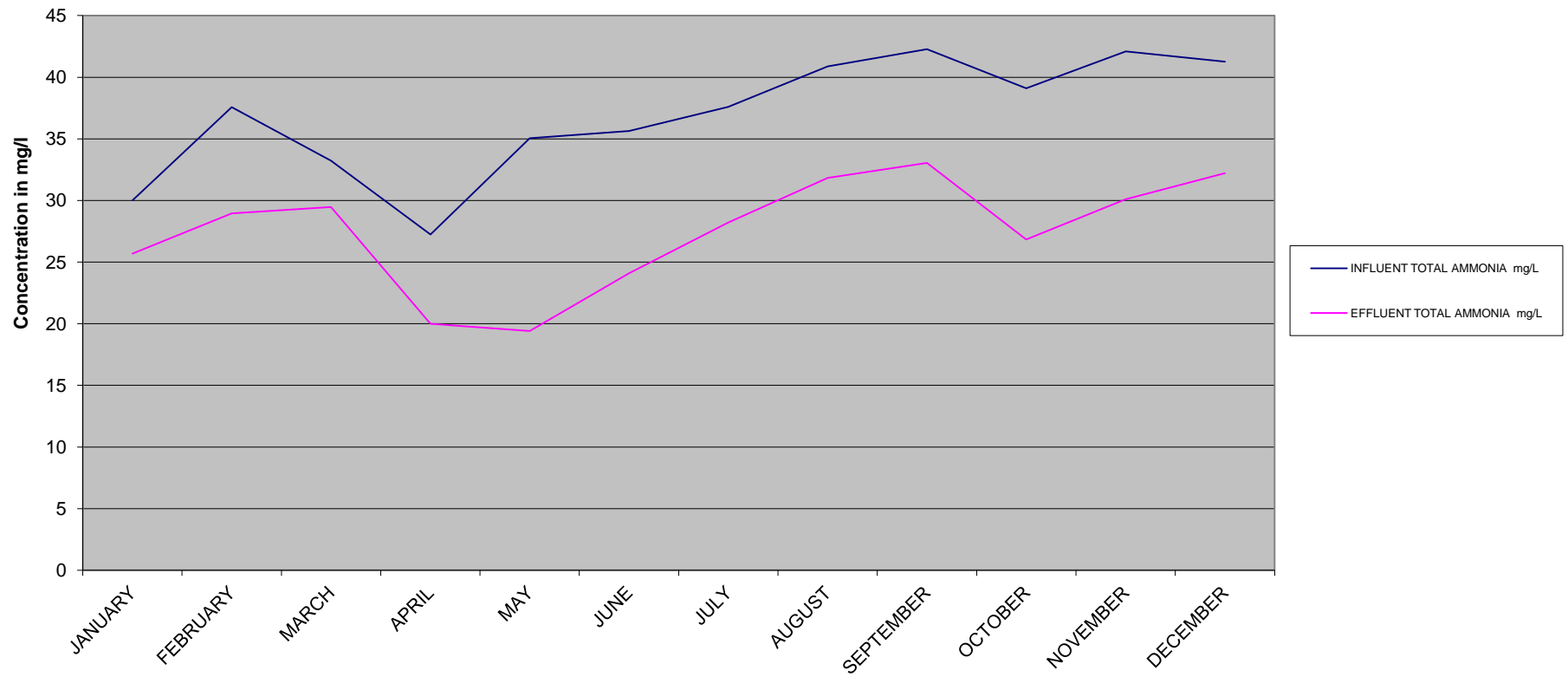
McKINLEYVILLE COMMUNITY SERVICES DISTRICT
WASTEWATER MANAGEMENT FACILITIES INFLUENT & EFFLUENT
AVERAGE AMMONIA, TEMPERATURE, pH, CALCULATED UN-IONIZED NH₃

ANNUAL MONTHLY AVERAGE 2011									
DATE	pH	TEMP ° C	INFLUENT TOTAL AMMONIA mg/L	UN-IONIZED NH ₃ (mg/L)	pH	TEMP ° C	EFFLUENT TOTAL AMMONIA mg/L	UN-IONIZED NH ₃ (mg/L)	% REMOVAL
JANUARY	7.5	14.5	30	0.407	7.0	10.0	26	0.074	14
FEBRUARY	7.6	14.6	38	0.674	6.8	11.0	29	0.058	23
MARCH	7.5	14.4	33	0.430	6.7	11.8	29	0.042	11
APRIL	7.5	14.8	27	0.329	6.9	13.8	20	0.055	27
MAY	7.9	15.9	35	1.103	6.8	15.1	19	0.051	45
JUNE	7.7	17.2	36	1.099	6.8	16.9	24	0.072	32
JULY	7.6	18.3	38	1.026	6.8	18.7	28	0.101	25
AUGUST	7.9	19.3	41	1.849	6.8	17.8	32	0.088	22
SEPTEMBER	8.0	19.4	42	2.363	6.8	16.8	33	0.093	22
OCTOBER	7.9	18.6	39	2.021	7.0	15.3	27	0.096	31
NOVEMBER	8.1	17.3	42	2.353	7.0	11.7	30	0.100	29
DECEMBER	7.9	15.4	41	1.471	7.1	8.9	32	0.097	22
AVERAGE	7.8	16.6	36.8	1.260	6.9	14.0	27.5	0.077	25
MAXIMUM	8.1	19.4	42.3	2.363	7.1	18.7	33.0	0.101	45
MINIMUM	7.5	14.4	27.2	0.329	6.7	8.9	19.4	0.042	11

Relationship Between Temperature and Removal of Monthly Averages



Average Total Ammonia



McKinleyville Community Services District
River Monitoring 2011

Upstream R-001											
Month	Date	Time	CFS	Temp	pH	D.O.	NTU	Conductivity	Ammonia	Hardness	TDS
January	1/6/2011	15:30	1930	9	6.7	12.4	21.2	73.2	ND	55	80
February	2/14/2011	11:00	442	9.6	7.5	14.6	2.59	94	ND	57	73
March	3/10/2011	09:15	19346	10.4	7	17.2	51.3	62.9	ND	47	67
April	4/13/2011	0:00	1870	12.9	8	12	15.4	119	ND	46	74
May	5/11/2011	10:15	1020	12.1	7.8	10.4	16.8	76.2	ND	N/A	67
June	6/21/2011	10:20	N/A	16.7	7.6	9.2	3.86	142.6	ND	N/A	73
July	7/20/2011	08:45	N/A	17.8	7.5	8.4	1.19	163.2	ND	N/A	120
August	8/8/2011	11:45	NA	19.2	7.7	5.1	0.32	210	ND	N/A	120
September	9/7/2011	13:45	N/A	21.5	7.9	7.7	0.73	221	ND	N/A	130
October	10/5/2011	10:50	N/A	15.1	7.8	8.8	2.84	135	ND	N/A	110
November	11/3/2011	10:40	N/A	12.7	8.2	8.9	0.41	142.3	ND	N/A	120
December	12/21/2011	11:45	N/A	10.7	8.4	10.1	0.38	123.6	ND	N/A	110
Average				13.98	7.68	10.40	9.75	130.25	ND	51.25	95.33
Maximum				21.5	8.4	17.2	51.3	221.0	ND	57.0	130.00
Minimum				9.0	6.7	5.1	0.3	62.9	ND	46.0	67.00

Downstream R-002												
Month	Date	Time	CFS	Temp	pH	D.O.	NTU	Conductivity	Ammonia	Hardness	TDS	VISUAL IMPACT ON RIVER
January	1/6/2011	15:10	1930	8.8	6.7	11.9	20.9	79.5	0.26	54	81	No Visual Impact Observed
February	2/14/2011	10:30	442	9.9	7.4	13.8	3.49	96.5	0.26	56	69	No Visual Impact Observed
March	3/10/2011	08:30	19346	11	7	17	46.2	67.1	0.25	48	67	No Visual Impact Observed
April	4/13/2011	0:00	1870	12.7	7.9	12.8	18.5	76.3	3.7	50	94	No Visual Impact Observed
May	5/11/2011	10:00	1020	12.3	7.9	10.1	16.1	68.4	2.9	N/A	99	No Visual Impact Observed
June	6/21/2011	10:05	N/A	17	7.5	9.3	1.22	115.2	ND	N/A	84	N/A
July	7/20/2011	08:30	N/A	18.3	7.5	7.5	1.13	176.3	ND	N/A	120	N/A
August	8/8/2011	11:25	N/A	17.7	7.4	8.1	1.33	352	ND	N/A	240	N/A
September	9/7/2011	13:30	N/A	18.5	7.6	8.4	1.02	422	ND	N/A	290	N/A
October	10/5/2011	10:05	N/A	14.4	7.4	9.6	5.46	217	ND	N/A	170	N/A
November	11/3/2011	10:15	N/A	11.8	7.9	8.6	1.72	229	ND	N/A	180	N/A
December	12/21/2011	11:15	N/A	9.6	7.5	10.2	0.99	829	ND	N/A	680	N/A
Average				13.50	7.48	10.61	9.84	227.36	1.47	52.00	181.17	
Maximum				18.5	7.9	17.0	46.2	829.0	3.7	56.0	680.00	
Minimum				8.8	6.7	7.5	1.0	67.1	0.3	48.0	67.00	

WWMF M-001											
Month	Date	Time	CFS	Temp	pH	D.O.	NTU	Conductivity	Ammonia	Hardness	TDS
January	1/6/2011	16:10	1930	7.8	7.4	3.4	86.4	354.0	23	N/A	200
February	2/14/2011	11:30	442	11.6	7.2	4.9	70.9	458	28	N/A	230
March	3/10/2011	09:40	19346	13.4	7.2	6.8	32.9	355	26	N/A	230
April	4/13/2011	14:20	1870	13.9	7	6.2	52.4	346	29	N/A	210
May	5/11/2011	14:20	1020	13.9	6.9	5.8	71.4	376	23	N/A	230
June	6/21/2011	10:50	N/A	17	6.8	4.6	174	439	15	N/A	270
July	7/20/2011	09:15	N/A	19.4	7.1	4.1	116	420	26	N/A	320
August	8/8/2011	13:20	N/A	18.8	6.9	3.7	70.7	725	26	N/A	320
September	9/7/2011	14:10	N/A	19	6.8	3.2	80.8	542	17	N/A	320
October	10/5/2011	11:15	N/A	15.9	6.9	5.2	135	600	22	N/A	300
November	11/3/2011	11:15	N/A	13.1	7.0	4.4	178	452	25	N/A	310
December	12/21/2011	14:10	N/A	8.8	7.1	2.8	109	637	31	N/A	280
Average				14.38	7.03	4.59	98.13	475.33	24.25	0.00	268.33
Maximum				19.4	7.4	6.8	178.0	725.0	31.0	0.0	320.00
Minimum				7.8	6.8	2.8	32.9	346.0	15.0	0.0	200.00

McKinleyville Community Services District
R-003 Fischer Ranch Backswamp 2011

Upstream of gate										
Month	Date	Time	Temp	pH	D.O.	Conductivity	TDS	Ammonia	Nitrate	Boron
January	1/26/2011	10:20	11.1	7.1	4.7	300.0	300	0.19	ND	ND
February	2/15/2011	11:15	12.5	7.4	8.5	301	300	0.61	0.53	150
March	3/8/2011	10:45	12.3	6.6	11	174.6	170	ND	ND	ND
April	No longer required per new permit									
May										
June										
July										
August										
September										
October										
November										
December										
Average			12.0	7.0	8.1	258.5	256.7	0.4	0.0	150.0
Maximum			12.5	7.4	11.0	301.0	300.0	0.6	0.5	150.0
Minimum			11.1	6.6	4.7	174.6	170.0	0.2	0.5	150.0

Fischer Road										
Month	Date	Time	Temp	pH	D.O.	Conductivity	TDS	Ammonia	Nitrate	Boron
January	DRY									
February	2/15/2011	10:45	13.4	7.8	11	30.3	31	ND	ND	ND
March	3/8/2011	11:00	12.1	7	14.9	27.7	32	ND	ND	ND
April	No longer required per new permit									
May										
June										
July										
August										
September										
October										
November										
December										
Average			12.8	7.4	13.0	29.0	31.5	#DIV/0!	#DIV/0!	#DIV/0!
Maximum			13.4	7.8	14.9	30.3	32.0	0.0	0.0	0.0
Minimum			12.1	7.0	11.0	27.7	31.0	0.0	0.0	0.0

McKinleyville Community Services District
Hiller Marsh 2011

Upstream R-004

Month	Date	Time	Temp	pH	D.O.	NTU	Ammonia	Nitrate	Conductivity	TDS	Boron
January	1/26/2011	9:45	11.4	7.2	9.3	2.23	ND	1.40	116.7	94	ND
February	2/15/2011	15:00	10.7	7.1	9.8	18.2	ND	0.15	35.1	30	ND
March	3/8/2011	11:35	11.4	6.8	14.6	8.41	ND	0.37	55.3	60	ND
April	No longer required per new permit										
May											
June											
July											
August											
September											
October											
November											
December											
Average			11.17	7.03	11.23	9.61	0.00	0.64	69.03	61.33	0.00
Maximum			11.4	7.2	14.6	18.2	0.0	1.4	116.7	94.0	0.0
Minimum			10.7	6.8	9.3	2.2	0.0	0.2	35.1	30.0	0.0

Upstream R-005

Month	Date	Time	Temp	pH	D.O.	NTU	Ammonia	Nitrate	Conductivity	TDS	Boron
January	1/26/2011	9:50	10.7	7	7.8	2.03	ND	0.032	73.6	69	ND
February	2/14/2011	15:05	9.6	6.9	8.1	4.96	ND	0.26	45.1	57	ND
March	3/8/2011	11:45	11.3	6.7	11.8	5.12	ND	ND	41.2	41	ND
April	No longer required per new permit										
May											
June											
July											
August											
September											
October											
November											
December											
Average			10.53	6.87	9.23	4.04	0.00	0.15	53.30	55.67	0.00
Maximum			11.3	7.0	11.8	5.1	0.0	0.3	73.6	69.0	0.0
Minimum			9.6	6.7	7.8	2.0	0.0	0.0	41.2	41.0	0.0

Downstream M-008

Date	Time	TSS	BOD	Boron	Nitrate	Ammonia

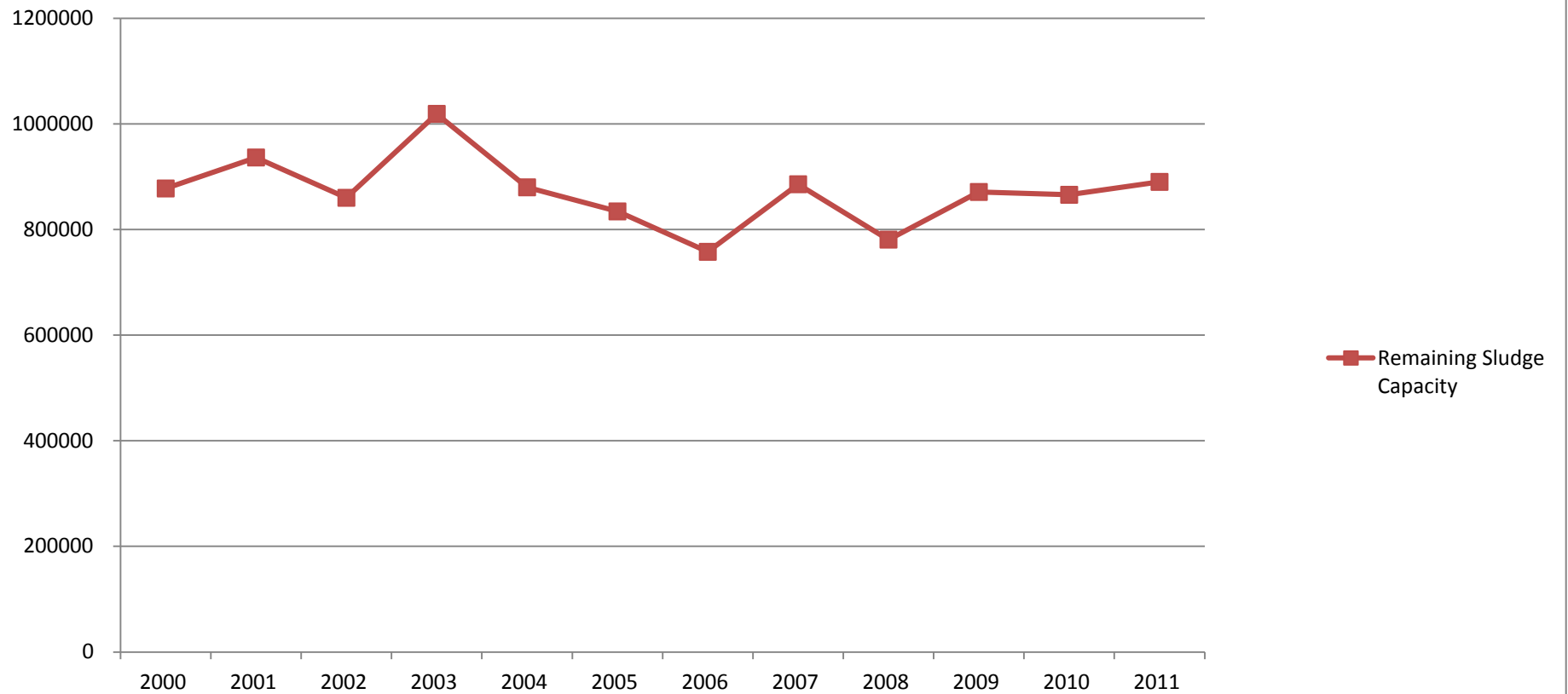
McKINLEYVILLE COMMUNITY SERVICES DISTRICT
MONITORING WELL DATA 2011

Location	W-001		W-002		W-006		W-007		W-008		W-009		W-014		W-015		W-016	
Quarter	Nitrate	TDS	Nitrate	TDS	Nitrate	TDS	Nitrate	TDS	Nitrate	TDS	Nitrate	TDS	Nitrate	TDS	Nitrate	TDS	Nitrate	TDS
January	7	130	2.8	84	18	260	18	240	7.7	130	16	210	2	73	0.7	150	ND	6100
April	9.3	180	4	120	22	310	13	210	2.1	100	8.9	150	1.9	500	0.2	80	ND	6200
July	4.8	130	6.5	130	17	250	16	200	6.4	130	13	190	1.6	76	ND	1300	ND	6400
October	9.6	140	8.5	120	21	230	22	210	17	220	23	250	0.85	69	ND	710	ND	6000
AVERAGE	7.7	145.0	5.5	113.5	19.5	262.5	17.3	215.0	8.3	145.0	15.2	200.0	1.6	179.5	0.5	560.0	ND	6175.0
MAXIMUM	9.6	180.0	8.5	130.0	22.0	310.0	22.0	240.0	17.0	220.0	23.0	250.0	2.0	500.0	0.7	1300.0	ND	6400.0
MINIMUM	4.8	130.0	2.8	84.0	17.0	230.0	13.0	200.0	2.1	100.0	8.9	150.0	0.9	69.0	0.2	80.0	0.0	6000.0

FEBRUARY 2011

POND 1 A				POND 1 B		
	CENTER	SOUTH	NORTH	CENTER	SOUTH	NORTH
1	12	14	7	12	18	10
2	12	25	8	12	19	12
3	15	37	11	10	14	12
4	10	30	12	13	13	13
5	8	20	11	10	14	9
6	9	31	15	9	10	14
7	8	19	12	10	12	14
8	10	15	11	12	11	15
9	13	13	8	11	13	12
10	8	15	12	10	12	13
11	12	11	13	10	18	12
12	9	14	14	11	12	12
13	14	13	14	12	10	13
14	10	13	12	8	13	12
15	12	15	13	12	11	15
16	12	18	14	12	12	13
17	10	10	11	12	13	13
18	14	14	13	11	12	14
19	10	13	13	12	10	20
20	10	10	13	11	11	12
21	12	11	12	14	9	12
22	12	11	15	18	12	12
23	18	13	12	15	18	12
24	14	12	14	15	13	12
AVERAGE	11	17	12	12	13	13
MAXIMUM	18	37	15	18	19	20
MINIMUM	8	10	7	8	9	9
ALL				POND A POND B		
AVERAGE	ALL	13		AVERAGE	13	13
MAXIMUM	ALL	37		MAXIMUM	23	19
MINIMUM	ALL	7		MINIMUM	8	9
POND 1A	141,128	CUFT	AVERAGE POND 1A =		1.1	Ft. DEPTH
POND 1B	104,422	CUFT	AVERAGE POND 1B =		1.0	Ft. DEPTH
TOTAL 245,550 CUFT						
CAPACITY	POND A = 634,415 CUFT POND B = 501,225 CUFT					
REMAINING	POND A = 493,287 CUFT POND B = 396,803 CUFT					
TOTAL SLUDGE CAPACITY 1,135,640 CUFT						
TOTAL REMAINING SLUDGE CAPACITY 890,090 CUFT						

Remaining Sludge Capacity



McKinleyville Community Services District
Wastewater Management Facility
Pond Ammonia Levels in mg/L
Annual Averages 2011

Date		Pond A	Pond B	Pond 2	Pond 3	Pond 4	Pond 5
January		28	27	27	28	29	28
February		30	31	32	32	32	35
March		27	27	29	29	30	29
April		21	18	19	21	22	21
May		20	22	23	21	24	25
June		22	23	25	23	26	24
July		25	26	25	25	26	27
August		27	31	28	29	30	34
September		31	30	31	31	32	32
October		27	28	28	28	27	29
November		31	29	28	31	30	30
December		33	33	32	32	33	36
Average		27	27	27	27	28	29
Minimum		20	18	19	21	22	21
Maximum		33	33	32	32	33	36

McKinleyville Community Services District
Wastewater Management Facility
Pond Temperatures in C
Annual Averages 2011

								Average
Date		Pond A	Pond B	Pond 2	Pond 3	Pond 4	Pond 5	Pond Temp.
January		11.1	11.1	10.9	10.7	10.4	9.7	10.6
February		12.1	11.3	11.9	11.3	11.0	9.9	11.3
March		12.7	12.8	12.6	12.5	12.1	11.4	12.4
April		14.8	14.7	14.9	14.8	14.7	12.7	14.4
May		17.2	17.0	17.3	17.1	16.8	15.0	15.9
June		19.2	19.1	19.3	19.3	18.7	17.1	18.8
July		20.4	20.3	20.7	20.5	19.9	18.2	20.0
August		19.9	21.8	20.1	19.9	19.2	18.0	19.8
September		18.9	19.0	19.0	18.9	18.1	16.9	18.5
October		17.0	17.1	17.1	16.9	16.4	15.6	16.7
November		13.4	13.4	13.2	12.9	12.4	12.1	12.9
December		10.9	10.8	10.4	10.1	9.7	9.3	10.2
Average		15.6	15.7	15.6	15.4	14.9	13.8	
Minimum		10.9	10.8	10.4	10.1	9.7	9.3	
Maximum		20.4	21.8	20.7	20.5	19.9	18.2	

McKinleyville Community Services District
Wastewater Management Facility
Pond pH

Annual Averages 2011

Annual Averages 2011								Average
Date		Pond A	Pond B	Pond 2	Pond 3	Pond 4	Pond 5	Pond pH
January		7.1	7.1	7.0	7.0	7.0	7.0	7.0
February		7.0	7.0	7.0	7.0	7.0	7.0	7.0
March		7.1	7.0	7.0	7.0	7.0	6.9	7.0
April		7.1	7.2	7.4	7.5	7.3	6.9	7.2
May		7.5	7.4	7.8	7.6	7.2	6.8	7.4
June		7.5	7.5	7.7	7.1	7.1	6.8	7.3
July		7.4	7.4	7.6	7.7	7.5	7.2	7.5
August		7.8	7.7	7.8	7.8	7.4	7.0	7.6
September		7.7	7.7	7.9	7.9	7.4	7.2	7.6
October		7.5	7.5	7.7	7.7	7.3	7.1	7.5
November		7.5	7.5	7.7	7.6	7.5	7.3	7.5
December		7.5	7.5	7.6	7.6	7.5	7.4	7.5
Average		7.4	7.4	7.5	7.5	7.3	7.1	
Minimum		7.0	7.0	7.0	7.0	7.0	6.8	
Maximum		7.8	7.7	7.9	7.9	7.5	7.4	

McKinleyville Community Services District

Wastewater Management Facility

Pond Dissolved Oxygen in mg/L

Annual Averages 2011

Annual Averages 2011								Average
Date		Pond A	Pond B	Pond 2	Pond 3	Pond 4	Pond 5	Pond D.O.
January		2.3	2.1	2.8	2.5	2.2	1.8	2.3
February		4.2	4.1	4.2	3.4	2.7	2.0	3.4
March		4.8	4.5	4.6	3.6	2.8	1.9	3.7
April		4.7	4.9	6.8	6.7	4.7	1.5	4.9
May		6.4	4.2	7.7	7.4	4.7	1.4	5.3
June		5.2	4.0	5.5	6.0	2.6	1.0	4.0
July		3.5	2.3	3.9	4.3	2.7	2.0	3.1
August		4.4	2.8	4.4	3.6	2.7	1.5	3.2
September		3.5	3.1	6.0	5.4	3.2	1.6	3.8
October		3.2	2.8	5.5	5.2	2.9	1.1	3.4
November		4.3	4.4	6.6	5.4	4.1	2.4	4.5
December		3.9	4.1	4.9	4.2	3.0	2.1	3.7
Average		4.2	3.6	5.2	4.8	3.2	1.7	
Minimum		2.3	2.1	2.8	2.5	2.2	1.0	
Maximum		6.4	4.9	7.7	7.4	4.7	2.4	

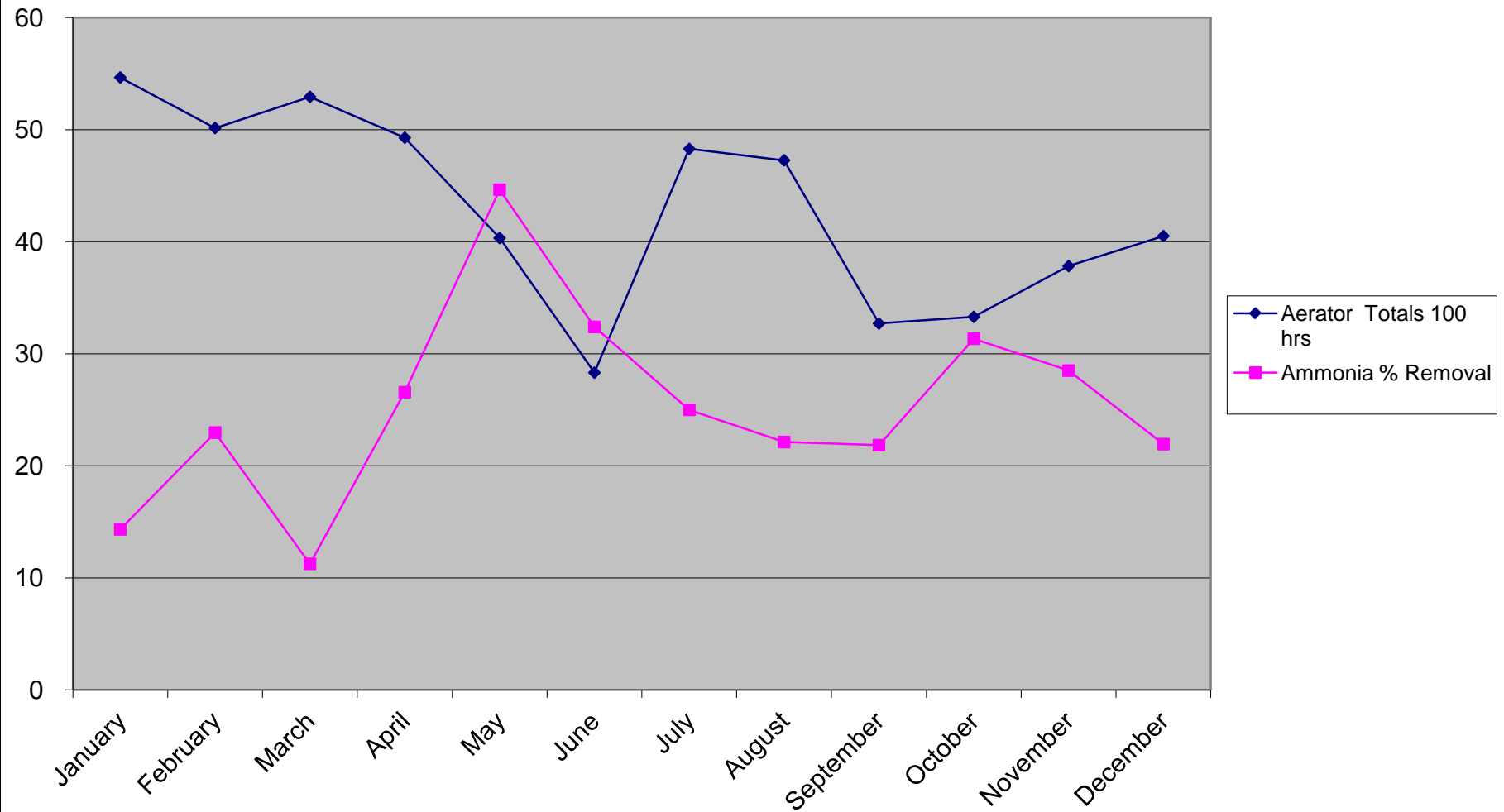
McKinleyville Community Services District
Wastewater Management Facility
Pond Depths, Elevation in Feet Above Sea Level
Annual Averages 2011

Annual Averages 2011								Average
Date		Pond A	Pond B	Pond 2	Pond 3	Pond 4	Pond 5	Pond Depth
January		62.6	62.6	61.9	61.5	60.9	60.5	61.7
February		62.2	62.2	61.4	61.0	60.6	59.9	61.2
March		62.7	62.7	61.8	61.4	60.9	60.2	61.6
April		59.9	59.9	59.0	61.3	60.6	59.9	61.6
May		62.4	62.4	61.7	61.3	61.0	60.7	61.6
June		62.4	62.4	61.8	61.5	61.1	60.7	61.7
July		62.4	62.4	61.8	61.5	60.0	60.1	61.3
August		62.2	62.2	61.6	61.4	60.9	60.6	61.5
September		62.4	62.4	61.6	61.4	60.9	60.5	61.5
October		62.7	62.7	61.9	61.7	61.3	61.0	61.9
November		62.6	62.6	61.8	61.6	61.3	61.1	61.8
December		62.4	62.4	61.6	61.4	61.2	60.9	61.7
Average		62.2	62.2	61.5	61.4	60.9	60.5	
Minimum		59.9	59.9	59.0	61.0	60.0	59.9	
Maximum		62.7	62.7	61.9	61.7	61.3	61.1	

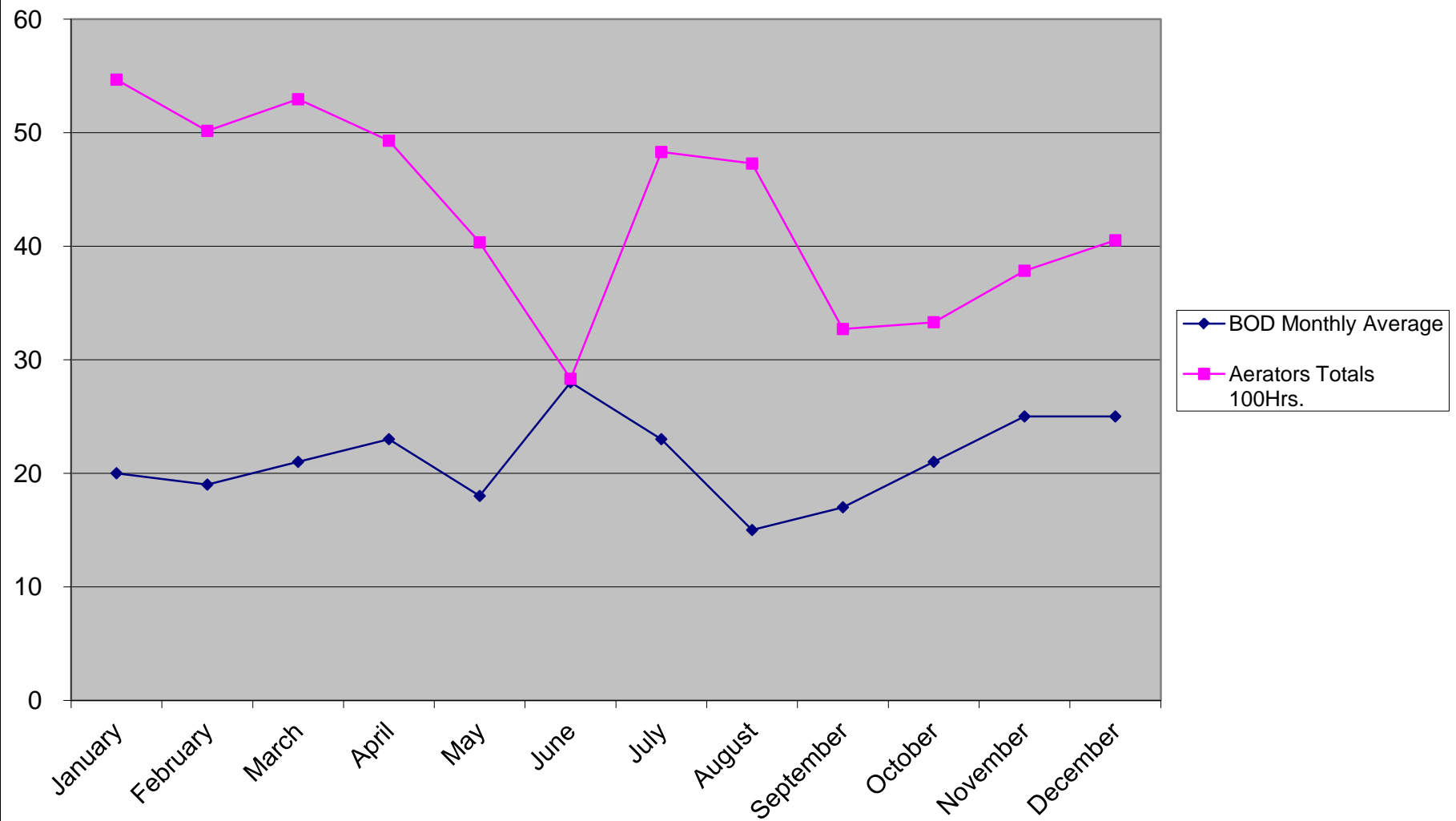
McKINLEYVILLE COMMUNITY SERVICES DISTRICT
WASTEWATER MANAGEMENT FACILITY
ANNUAL TOTAL AERATOR HOURS 2011

DATE	Pond A					Pond B					Pond		TOTALS
	1A	2A	3A	4A	5A	1B	2B	3B	4B	5B	2-A	2-B	
January	228.5	307.6	719.3	36.1	725.7	218.6	296.6	718.5	36.6	726.4	726.2	726	5466.1
February	198.8	286.7	656	35.8	659.2	204.5	277.7	659.4	32.4	666.6	668.8	668.9	5014.8
March	233.7	328.7	732.7	38.6	739.1	200.7	322.7	732.3	38.4	739.7	566.9	590.1	5293.6
April	225.7	307.3	701.5	36.8	708.1	201.3	296.7	696.3	35.5	708.4	506.4	504.6	4928.6
May	204.5	303.4	535.9	68.1	661.5	184.4	296.7	528.1	65	238.3	474.2	473	4033.1
June	165.3	258.5	242.7	107.2	535.2	158.2	254.9	239.7	99.6	0	385.3	385.2	2831.8
July	411.7	359	384.3	371.4	554.3	450.2	470.7	366.8	428.8	234.1	398.8	398.7	4828.8
August	141.7	0	402.1	566.1	554.4	594.3	315.7	385.5	551.4	418.7	398.5	398.8	4727.2
September	172.3	68	276	132.2	536.1	191.4	269.4	364.7	104.3	405.2	375.3	375.6	3270.5
October	187.4	286.7	0	138.2	602.2	182.9	45	426.2	140.6	455.1	433	432.4	3329.7
November	156.1	263.5	101.8	155.9	680.4	146.4	100.4	490.5	147.4	513	515	512.9	3783.3
December	148.8	253.6	128.2	153.9	740.5	136	239.6	500.9	130.7	558.6	531.3	529.2	4051.3
TOTAL	2474.5	3023.0	4880.5	1840.3	7696.7	2868.9	3186.1	6108.9	1810.7	5664.1	5979.7	5995.4	51558.8
AVERAGE	206.2	251.9	406.7	153.4	641.4	239.1	265.5	509.1	150.9	472.0	498.3	499.6	4296.6
MAXIMUM	411.7	359.0	732.7	566.1	740.5	594.3	470.7	732.3	551.4	739.7	726.2	726.0	5466.1
MINIMUM	141.7	0.0	0.0	35.8	535.2	136.0	45.0	239.7	32.4	0.0	375.3	375.6	2831.8

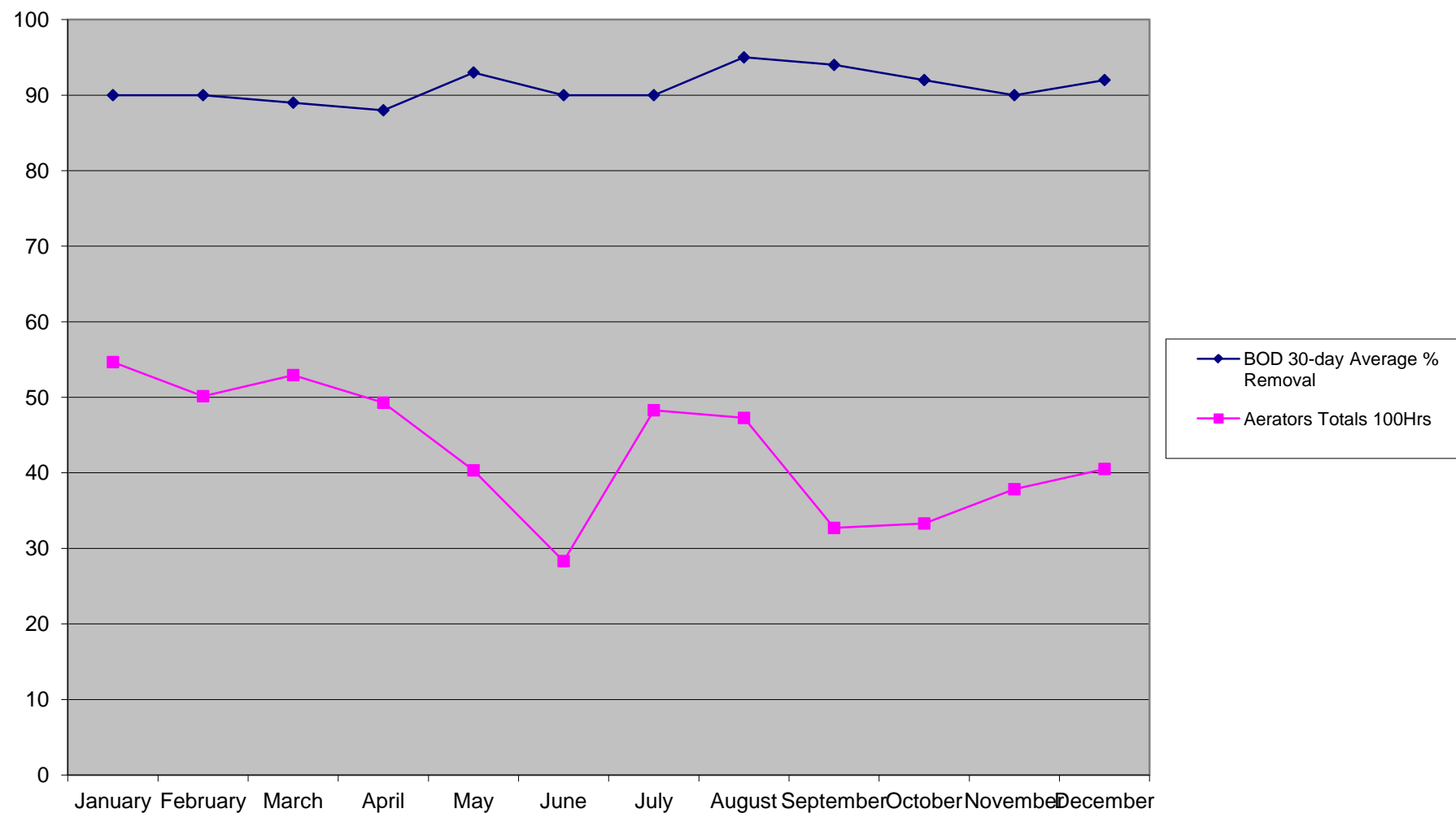
Aerator Hours Versus Ammonia Percent Removal



Aerator Hours Versus Effluent BOD



Aerator Hours Versus BOD 30-day Average % Removal



MCKINLEYVILLE COMMUNITY SERVICES DISTRICT
WASTEWATER MANAGEMENT FACILITY
ELECTRIC, CL₂, SO₂, WATER and RAIN DATA
ANNUAL 2011

DATE	PG&E kw Hours	CL ₂ USAGE lbs.	SO2 USAGE lbs.	RAIN inches
JANUARY	24560	3805	1325	3.35
FEBRUARY	22880	2693	1026	4.87
MARCH	23920	3929	1597	13.12
APRIL	22400	4183	1509	4.69
MAY	22240	2572	582	1.26
JUNE	21440	3045	0	0.59
JULY	27360	2522	0	0.18
AUGUST	28560	3448	0	0.10
SEPTEMBER	22720	3365	0	0.39
OCTOBER	22080	2845	0	4.87
NOVEMBER	25040	2709	0	4.67
DECEMBER	25360	3885	32	1.47

TOTAL	288560	39001	6071	39.56
AVERAGE	24047	3250	506	3.30
MAXIMUM	28560	4183	1597	13.12
MINIMUM	21440	2522	0	0.10

WWMF WATER METER			
DATE	LOW	HIGH	CU.FT.
START	24817	37460	
END	27344	40677	

SPECIAL TESTING

DATE	INFLUENT			EFFLUENT		
	TKN	ALKALINITY	NITRATE	TKN	ALKALINITY	NITRATE
1/7/2011	49	220	0.2	29	180	0.21
1/14/2011	57	210	ND	30	180	ND
1/21/2011	51	210	0.48	32	170	ND
1/28/2011	70	290	ND	30	180	ND
2/4/2011	69	290	ND	33	180	ND
2/11/2011	72	310	ND	40	210	ND
2/18/2011	45	180	0.56	32	190	ND
2/25/2011	46	200	0.28	36	180	ND
3/4/2011	60	240	ND	31	170	ND
3/11/2011	53	240	ND	26	180	ND
3/18/2011	45	170	ND	33	170	ND
3/25/2011	46	180	0.47	32	150	ND
4/1/2011	43	200	ND	23	140	ND
4/8/2011	37	200	ND	27	160	ND
4/15/2011	48	180	0.22	31	140	ND
4/22/2011	74	200	ND	32	130	ND
4/29/2011	72	220	ND	40	140	ND
5/6/2011	77	220	ND	38	150	ND
5/13/2011	54	240	ND	30	150	ND
5/20/2011	61	220	ND	32	150	ND
5/27/2011	62	220	ND	32	160	ND
6/3/2011	42	210	ND	25	170	ND
6/10/2011	57	250	ND	32	180	ND
6/17/2011	70	260	ND	39	180	ND
6/24/2011	73	250	ND	41	200	ND
7/1/2011	81	290	ND	46	190	ND
7/8/2011	52	200	ND	42	220	ND
7/15/2011	75	300	ND	46	190	ND
7/22/2011	59	260	ND	39	180	ND
7/29/2011	76	290	ND	41	230	ND
8/5/2011	48	210	ND	36	230	ND
8/12/2011	73	310	ND	42	210	ND
8/19/2011	77	270	ND	41	210	ND
8/26/2011	43	250	ND	31	210	ND
9/2/2011	57	280	ND	31	210	ND
9/9/2011	67	280	ND	32	220	ND
9/16/2011	24	260	ND	14	220	ND
9/23/2011	50	290	ND	23	220	ND
9/30/2011	76	270	ND	49	220	ND
10/7/2011	53	230	ND	35	210	ND
10/14/2011	54	230	ND	36	210	ND
10/21/2011	44	240	ND	28	210	ND
10/28/2011	87	310	ND	35	220	ND
11/4/2011	66	250	ND	40	210	ND
11/10/2011	94	270	ND	50	210	ND
11/18/2011	71	290	ND	40	200	ND
11/22/2011	60	240	ND	33	210	ND
12/2/2011	58	220	ND	36	200	ND
12/9/2011	55	220	ND	36	210	ND
12/16/2011	80	300	ND	36	210	ND
12/29/2011	30	230	ND	24	200	ND