Montana Department of
ENVIRONMENTAL QUALITY

Brian Schweitzer, Governor
Richard H. Opper, Director

P.O. Box 200901 • Helena, MT 59620-0901 • (406) 444-2544 • www.deq.mt.gov

July 31, 2012

Kurt Markegard, Director of Public Works
115 West First Street
PO Box 10
Laurel, MT 59044

RE: Montana WPCSRF Project
C301241
Laurel, Montana

Dear Mr. Markegard:

Enclosed is a copy of the Finding of No Significant Impact (FONSI) and Environmental Assessment (EA) for the City of Laurel Wastewater Facilities Plan. Please print the FONSI letter in one publication of your local paper under legal advertising and return the proof of advertising. You do not have to print the EA. We recommend that you advertise this as soon as possible to allow for a 30-day comment period. We have distributed these documents to the enclosed list of agencies.

If you have any questions, please do not hesitate to contact me at (406) 444-5322.

Sincerely,

Michele Marsh

Michele Marsh, P.E.
Environmental Engineer
Technical & Financial Assistance Bureau

Encl.

cc: Chad Hanson, PE, Great West Engineering, Inc. (via e-mail)
Nick Kuntz, Department of Commerce (via e-mail)

Montana Department of
ENVIRONMENTAL QUALITY

Brian Schweitzer, Governor
Richard H. Opper, Director

P.O. Box 200901 • Helena, MT 59620-0901 • (406) 444-2544 • www.deq.mt.gov

July 31, 2012

FINDING OF NO SIGNIFICANT IMPACT

TO ALL INTERESTED GOVERNMENTAL AGENCIES AND PUBLIC GROUPS

As required by state and federal rules for determining whether an Environmental Impact Statement is necessary, an environmental review has been performed on the proposed action below:

Project	City of Laurel Wastewater Treatment Plant Improvements, Phase 2A2
Location	Laurel, Montana
Project Number	C301241
Total Cost	$6,989,500

The City of Laurel, through a 2003 wastewater facilities plan and its 2006 and 2009 updates, determined the need to upgrade its wastewater treatment system. A major concern of the City was the anticipated stricter disinfection limits in its next Montana Pollutant Discharge Elimination System (MPDES) permit. It was also expected that completion of the Total Maximum Daily Load (TMDL) process on the Yellowstone River may result in more stringent ammonia and nutrient limits. In addition to permit issues, the City of Laurel was also concerned about the amount of inflow and infiltration (I/I) into its sewer mains during the irrigation season, when groundwater levels rise significantly in the Laurel area.

In 2010, wastewater treatment alternatives were re-evaluated by the City of Laurel and a multi-stage biological nutrient removal (BNR) system was selected. A preliminary design study was completed in 2011 to choose the specific BNR system. The design report compared a site-specific BNR design patterned on the modified Ludzack-Ettinger (MLE) form of activated sludge treatment and five proprietary oxidation ditch systems. The MLE system was chosen over the oxidation ditch systems primarily because of the high relative efficiency of the blowers and fine bubble diffusers, and also the ability to separately control and optimize the mixing and aeration functions. In addition to installation of an MLE wastewater treatment system, the proposed project includes the following improvements:

- Secondary clarifier renovations.
- Secondary sludge (return activated sludge (RAS)/waste activated sludge (WAS)) pumping.
- Sodium hypochlorite feed for filament control.
- Solids processing and chemical feed facilities.
- UV disinfection.
- Standby emergency power.
- General supervisory control and data acquisition (SCADA) improvements.
- Civil site improvements.

Construction of the proposed improvements is necessary to allow the facility to meet its upcoming permit limits and will significantly improve the operability, reliability, and treatment capability of the City of Laurel wastewater treatment facilities. Because the TMDL process has not yet been completed on the Yellowstone River, exact goals for nutrient removal are as yet unknown. Therefore, in the future, the TMDL and associated MPDES permit effluent limits may require supplementary upgrades to the secondary treatment system for nutrient removal.

Federal and State grant/loan programs will fund the project. Environmentally sensitive characteristics such as wetlands, floodplains, threatened or endangered species, and historical sites are not expected to be adversely impacted as a result of the proposed project. Public participation during the planning process demonstrated support for the selected alternative. No significant long-term environmental impacts were identified. An environmental assessment (EA), which describes the project and analyzes the impacts in more detail, is available for public scrutiny on the DEQ web site (http://www.deq.mt.gov/ea.asp) and at the following locations:

Department of Environmental Quality
1520 East Sixth Avenue
P.O. Box 200901
Helena, MT 59620-0901
mmarsh@mt.gov

City of Laurel
115 W. First Street
Laurel, MT 59044

Comments on the EA may be submitted to the Department of Environmental Quality at the above address. After evaluating comments received, the department will revise the environmental assessment or determine if an environmental impact statement is necessary. If no substantive comments are received during the comment period, or if substantive comments are received and evaluated and the environmental impacts are still determined to be non-significant, the agency will make a final decision. No administrative action will be taken on the project for at least 30 calendar days after release of the Finding of No Significant Impact.

Sincerely,

Todd Teegarden

Todd Teegarden, Bureau Chief
Technical and Financial Assistance Bureau
Planning, Prevention & Assistance Division

CITY OF LAUREL
WASTEWATER FACILITIES PLAN
ENVIRONMENTAL ASSESSMENT

I. COVER SHEET

A. PROJECT IDENTIFICATION

Name of Project:	City of Laurel Wastewater Treatment Plant Improvements, Phase 2A2
Applicant:	City of Laurel
Address:	115 West First Street PO Box 10 Laurel, MT 59044
Project Number:	C301241

B. CONTACT PERSON

Name:	Kurt Markegard, Director of Public Works
Address:	115 West First Street PO Box 10 Laurel, MT 59044
Telephone:	(406) 628-4796 ext 3

C. ABSTRACT

The City of Laurel, through a 2003 wastewater facilities plan and its 2006 and 2009 updates, determined the need to upgrade its wastewater treatment system. A major concern of the city was the amount of inflow and infiltration (I/I) in its sewer mains and the anticipated stricter disinfection limits in its next Montana Pollutant Discharge Elimination System (MPDES) permit. It was also expected that development of nutrient standards and completion of the Total Maximum Daily Load (TMDL) process on the Yellowstone River may result in more stringent ammonia and nutrient limits.

The existing rotating biological contactor (RBC) treatment plant is not capable of meeting the more stringent ammonia and nutrient limits expected in future MPDES discharge permits. In addition, the facility plans identified capacity and on-going maintenance concerns.

Improvements recommended in the 2003 wastewater facilities plan and its updates that have been completed to date have included replacement of two lift stations and improvements in the wastewater treatment plant (WWTP) headworks building and collection system improvements that resulted in significant reductions in I/I.

In 2010, wastewater treatment alternatives were re-evaluated by the City of Laurel and a multi-stage biological nutrient removal (BNR) system was selected. A preliminary design study was completed in 2011 to choose the specific BNR system. The design report compared a site-specific BNR design patterned on the modified Ludzack-Ettinger (MLE) form of activated sludge treatment and five proprietary oxidation ditch systems. The MLE system was chosen over the oxidation ditch systems primarily

because of the high relative efficiency of the blowers and fine bubble diffusers, and also the ability to separately control and optimize the mixing and aeration functions. In addition to installation of an MLE wastewater treatment system, the proposed project includes the following improvements:

- Secondary clarifier renovations.
- Secondary sludge (return activated sludge (RAS)/waste activated sludge (WAS)) pumping.
- Sodium hypochlorite feed for filament control.
- Solids processing and chemical feed facilities.
- UV disinfection.
- Standby emergency power.
- General supervisory control and data acquisition (SCADA) improvements.
- Civil site improvements.

Construction of the proposed improvements is necessary to allow the facility to meet its upcoming permit limits and will significantly improve the operability, reliability, and treatment capability of the City of Laurel wastewater treatment facilities. Because nutrient standards have not yet been developed and the TMDL process has not yet been completed on the Yellowstone River, exact goals for nutrient removal are as yet unknown. Therefore, in the future, stricter MPDES permit effluent limits may require supplementary upgrades to the secondary treatment system for nutrient removal.

Federal and State grant/loan programs will fund the project. The Phase 2A2 project has an estimated total project cost of $6,989,500 (includes engineering, administration, and construction costs). The Laurel wastewater improvements will be financed with a Treasure State Endowment Program (TSEP) grant of $532,500, City of Laurel funds in the amount of $1,400,000, and a Montana State Water Pollution Control Revolving Fund (WPCSRF) loan, at 3% interest, for the remaining cost of $5,057,000.

Environmentally sensitive characteristics such as wetlands, floodplains, threatened or endangered species and historical sites are not expected to be adversely impacted as a result of the proposed project. Additional environmental impacts related to land use, water quality, air quality, public health, energy, noise, and growth were also assessed. No significant long-term environmental impacts were identified.

Under Montana law, (75-6-112, MCA), no person may construct, extend, or use a public sewage system until the DEQ has reviewed and approved the plans and specifications for the project. Under the Montana WPCSRF Act, the DEQ may loan money to municipalities for construction of public sewage systems.

All proposed improvements will be designed to meet state standards in accordance with Circular DEQ-2 and will be constructed using standard construction methods. Best management practices will be implemented to minimize or eliminate pollutants during construction. A Stormwater Discharge General Permit and a construction dewatering permit from the DEQ may be required prior to construction.

The DEQ Technical and Financial Assistance (TFA) Bureau, has prepared this Environmental Assessment (EA) to satisfy the requirements of the National Environmental Policy Act (NEPA) and the Montana Environmental Policy Act (MEPA).

D. COMMENT PERIOD

Thirty (30) calendar days.

II. PURPOSE OF AND NEED FOR ACTION

The original Laurel wastewater treatment plant (WWTP) was built in 1941 and consisted of primary treatment and anaerobic sludge digestion. Chlorine disinfection and other improvements were added in 1961. The WWTP was upgraded to secondary treatment standards in 1985 with the addition of rotating biological contactors (RBCs). Since 1985 the only significant improvements to the plant have been an additional five sludge drying beds, digester rehabilitation, the addition of improved programmable logic controllers (PLCs), and headworks improvements. Most of the equipment at the Laurel WWTP is over 20 years old and in need of replacement.

The Laurel WWTP is authorized to discharge to the Yellowstone River through a Montana Pollutant Discharge Elimination System (MPDES) permit. The facility's existing permit includes more stringent limits for total residual chlorine and *E. coli* bacteria, which go into effect on June 1, 2013, that the existing facility will be unable to meet without improvements. In addition, the Yellowstone River downstream of the facility's discharge point is listed on DEQ's 2012 303(d) list of impaired streams for chlorophyll-a and nitrates with municipal point discharge listed as a probable cause of the impairment. As a means of restoring water quality in the river, nutrient standards and a total maximum daily load (TMDL) with waste load allocations (WLAs) that will lower nutrient loadings to the river will be prepared in the future by the DEQ. The resulting stricter nutrient limits in future MPDES permits may limit the amount of nitrogen and phosphorus that the WWTP can discharge to the river. The RBC technology currently used in Laurel has its limitations with respect to nutrient removal and cannot provide the degree of treatment needed to meet the upcoming limits in the discharge permit or to accommodate anticipated growth of the community.

In order to address the aging equipment concerns and provide capacity for the design wastewater flows and loads through the planning period, the wastewater treatment facility will need to be upgraded, expanded, and additional processes added. In addition, the facility's new discharge limitations (as well as any future TMDL-related limits) will require that a more advanced treatment process capable of nutrient removal be incorporated into the wastewater facilities design.

The current MPDES permit does not have an ammonia limit; however, discussions with the DEQ Permitting and Compliance Section indicate that future permits most likely will. Meeting a stringent ammonia standard would require almost complete nitrification in the treatment process. Another issue affecting future permits is that neither nutrient standards nor Waste Load Allocations (WLAs) related to a TMDL have yet been developed for the Yellowstone River. It is likely that even more stringent nutrient limits will be written into Laurel's future MPDES permits. The RBC technology currently used in Laurel has its limitations with respect to nutrient removal and cannot provide the degree of treatment needed to meet the anticipated limits in the discharge permit or to accommodate growth. Exact goals for nutrient removal are as yet unknown. In the future, MPDES permit effluent limits may require supplementary upgrades to the secondary treatment system for nutrient removal.

TABLE II-1 SUMMARY OF INTERIM AND FINAL MPDES PERMIT LIMITS FOR TOTAL RESIDUAL CHLORINE AND *E. COLI* BACTERIA

Current and Future Discharge Limits			
Parameter	Average Monthly Limit (interim/ **future**)	Average Weekly Limit (interim/**future**)	Maximum Daily Limit (interim/ **future**)
Total Residual Chlorine (mg/l)	-----/0.011	-----	0.5/**0.019**
E. coli bacteria (cfu/100ml)[1]	34,020/**126**	74,340/**252**	-----
E. coli bacteria (cfu/100ml)[2]	NA/**630**	NA/**1260**	-----

[1] This limit applies during the period April 1 through October 31.
[2] This limit applies during the period November 1 through March 31.

The City of Laurel's key wastewater planning documents developed over the past decade are a 2003 wastewater facilities plan, with its 2006 and 2009 updates; a June 2010 wastewater treatment evaluation; and a December 2011 preliminary design report on biological nutrient removal (BNR) and expansion of the WWTP.

The City of Laurel's 2011 preliminary design report on biological nutrient removal (BNR) and expansion of the WWTP expounds upon the principal findings and recommendations of the 2009 Laurel Wastewater Facilities Plan Update and the 2010 Evaluation of the Laurel WWTP. The WWTP improvements recommended in the 2011 report for implementation by the City at this time are as follows:

- Biological nutrient removal (nitrification) using the Modified Ludzak-Ettinger (MLE) form of activated sludge treatment, plus an anaerobic zone to foster biological phosphorus removal.
- Baffle amendments in the two existing secondary clarifiers.
- New return activated sludge (RAS) pumps.
- Ultraviolet (UV) disinfection.
- Standby generator.
- Sodium hypochlorite feed system for filament control.
- New solids processing and chemical feed system for total phosphorus removal.

III. ALTERNATIVES INCLUDING THE PROPOSED ACTION

Alternatives analyzed in the 2011 Laurel Preliminary Design Report for the biological nutrient removal (BNR) process are summarized below:

A. BIOLOGICAL NUTRIENT REMOVAL PROCESS – The alternatives considered for the BNR process are one enhanced activated sludge process, four different proprietary oxidation ditch systems, and no action:

1. (BNR1) Site-specific Modified Ludzak-Ettinger (MLE) form of activated sludge treatment.
2. (BNR 2) Aeration Industries TRI-Oval oxidation ditch system.

3. (BNR3) WesTech Oxystream oxidation ditch system.
4. (BNR4) Ovivo Carrousel oxidation ditch system.
5. (BNR5) Kruger BioDenitro oxidation ditch system.
6. (BNR6) No action.

1. (BNR1) INSTALLATION OF A SITE-SPECIFIC MODIFIED LUDZAK-ETTINGER SYSTEM – Three stages would be installed initially, with space allocated for two additional phases to be added in the future should nutrient removal requirements become more stringent. The first stage would be anaerobic to facilitate biological phosphorus removal, followed by a second anoxic zone for denitrification, and a third zone for nitrification and polishing BOD removal. The existing concrete rotating biological contactor (RBC) basin would likely be used for the anaerobic and anoxic zones.
2. (BNR2) INSTALLATION OF AN AERATION INDUSTRIES TRI-OVAL PROPRIETARY OXIDATION DITCH SYSTEM – This oxidation ditch incorporates anaerobic and anoxic zones into the center of the ditch and provides aeration in the annular ring.
3. (BNR3) INSTALLATION OF A WESTECH OXYSTREAM PROPRIETARY OXIDATION DITCH SYSTEM – Separate anaerobic and anoxic zones are located prior to the ditch, which is kept entirely aerobic.
4. (BNR4) INSTALLATION OF AN OVIVO CARROUSEL PROPRIETARY OXIDATION DITCH SYSTEM – This system incorporates a single anaerobic/anoxic zone, with an aerobic zone comprised of oxidation ditches.
5. (BNR5) INSTALLATION OF A KRUGER BIODENITRO PROPRIETARY OXIDATION DITCH SYSTEM – There is a separate anaerobic zone, and then an aerated oxidation ditch where oxygen levels are varied at different points in the ditch to encourage nitrification and denitrification.
6. (BNR6) NO ACTION - The RBC technology cannot provide the degree of nutrient removal needed to meet the upcoming limits in the discharge permit or to accommodate anticipated growth in the community. Therefore, the no-action alternative was not considered further.

In addition to construction of the BNR treatment units, improvements to ancillary components will be made. Alternatives for disinfection were analyzed in the 2003 Facility Plan and its 2006 and 2009 updates and ultraviolet disinfection was chosen as the best alternative. Alternatives were not presented by the engineer in the facilities plans for the other WWTP improvements since they are straightforward solutions to current wastewater treatment plant deficiencies. Ultraviolet disinfection and the other proposed ancillary improvements are listed below:

- REPLACEMENT OF GAS CHLORINATION WITH ULTRAVIOLET (UV) DISINFECTION
- SECONDARY CLARIFIER PIPING RENOVATIONS
- INSTALLATION OF NEW RETURN ACTIVATED SLUDGE (RAS) PUMPS
- CONSTRUCTION OF A SOLIDS PROCESSING BUILDING WITH A 150 GPM ROTARY DRUM THICKENER (RDT) AND POLYMER AND FERRIC COMPOUND FEED SYSTEMS

- SODIUM HYPOCHORITE FEED SYSTEM TO CONTROL FILAMENTOUS ORGANISMS IN THE ACTIVATED SLUDGE PROCESS
- GENERAL SCADA IMPROVEMENTS
- CIVIL SITE IMPROVEMENTS

IV. COST COMPARISON FOR ALTERNATIVES USING PRESENT WORTH ANALYSIS

Present worth analysis is a method of comparing alternatives in present day dollars and is used to determine the most cost-effective alternative. An alternative with low initial capital cost may not be the most cost-efficient project if high monthly operation and maintenance costs occur over the life of the alternative. Summaries of the present worth analysis for the feasible biological nutrient removal (BNR) treatment alternatives are provided in Table IV-1. Salvage values were considered to be inconsequential and are therefore not presented. Operation and maintenance cost differences have been limited only to the annual cost for electricity. A discount rate of 5.0%, a unit energy cost of $0.055/kWh, and a cost accounting period of 20 years were used. Table IV-2 lists the costs of the ancillary wastewater treatment plant improvements.

TABLE IV-1 – ECONOMIC EVALUATION OF BNR TREATMENT ALTERNATIVES

Alternative Number	Alternative Description	Total Capital Cost	Present Worth of O&M Costs	Total Present Worth
	PHASE 2A2			
BNR1	**Site-specific Modified Ludzak-Ettinger form of activated sludge treatment.**	**$1,260,000**	**$350,000**	**$1,610,000**
BNR2	Aeration Industries TRI-Oval proprietary oxidation ditch system.	$2,040,000	$530,000	$2,570,000
BNR3	WesTech Oxystream proprietary oxidation ditch system.	$650,000	$520,000	$1,170,000
BNR4	Ovivo Carrousel proprietary oxidation ditch system.	$1,340,000	$380,000	$1,720,000
BNR5	Kruger BioDenitro proprietary oxidation ditch system.	$1,720,000	$440,000	$2,160,000

TABLE IV-2 – COST OF ANCILLARY WASTEWATER TREATMENT PLANT IMPROVEMENTS

Retrofit of the two existing secondary clarifiers with energy-dissipating inlet and perimeter baffles.	**$360,000**

Installation of new return activated sludge (RAS) pumps and sludge suction piping improvements.	**$240,000**
New solids processing building with new rotary drum thickener (RDT) and polymer and ferric compound feed systems.	**$730,000**
Sodium hypochlorite feed for filament control.	**$20,000**
Replacement of gas chlorine with ultraviolet (UV) disinfection.	**$510,000**
General SCADA improvements.	**$160,000**
Civil site improvements.	**$160,000**

A. BASIS OF SELECTION OF PREFERRED ALTERNATIVE

The 2011 Preliminary Design Report compared the biological nutrient removal (BNR) treatment alternatives in terms of capital and present worth operations and maintenance costs, as well as non-economic factors such as reliability, ease of maintenance, type of aeration, reuse of rotating biological contactor (RBC) basin, and type of mixed liquor recycle. Each alternative was assigned a ranking score, with 5 being the most favorable and 1 being the least favorable. The ranking factors were then multiplied by the relative weight of importance assigned to each evaluation criteria. The weighted rank scores were then summed, resulting in a weighted rank total score. This information is presented in Table IV-3 below.

TABLE IV-3 – COMPARISON OF WASTEWATER TREATMENT AND EFFLUENT DISINFECTION ALTERNATIVES - SUMMARY EVALUATION AND RANKING

Comparison Parameter	Weighted Factor	BNR1	BNR2	BNR3	BNR4	BNR5
Capital Cost	0.5					
Alternative Rank		4	1	2	4	2
Weighted Rank		2	0.5	1.0	2.0	1.0
O & M Cost	0.2					
Alternative Rank		5	1	1	4	3
Weighted rank		1	0.2	0.2	0.8	0.6
Reliability	0.1					
Alternative Rank		5	4	2	2	1
Weighted Rank		0.5	0.4	0.2	0.2	0.1
Ease of Maintenance	0.05					
Alternative Rank		4	4	2	2	1
Weighted Rank		0.2	0.2	0.1	0.1	0.05

Type of Aeration	0.05					
Alternative Rank		5	4	2	2	1
Weighted Rank		0.25	0.2	0.1	0.1	0.05
Reuse of RBC	0.05					
Alternative Rank		4	2	2	2	2
Weighted Rank		0.2	0.1	0.1	0.1	0.1
Mixed Liquor Recycle	0.05					
Alternative Rank		5	5	3	3	1
Weighted Rank		0.25	0.25	0.15	0.15	0.05
WEIGHTED RANK TOTAL		**4.40**	**1.85**	**1.85**	**3.45**	**1.95**

Alternative BNR1, the site-specific Modified Ludzak-Ettinger form of activated sludge treatment, ranked the highest in every category and is the treatment process selected by the City of Laurel. In addition to installation of an MLE wastewater treatment system, improvements to other unit processes were deemed necessary to optimize treatment. Brief descriptions and associated benefits of those improvements are as follows:

- REPLACEMENT OF GAS CHLORINATION WITH ULTRAVIOLET (UV) DISINFECTION – The new UV system would be installed in the existing chlorine contact chamber. The primary advantage of this alternative is that it eliminates the safety concerns associated with handling a chlorine product, particularly chlorine gas. Use of UV also allows for the *E. coli* and residual total chlorine limits in the MPDES permit to be met.

- SECONDARY CLARIFIER PIPING RENOVATIONS – Retrofit of the two secondary clarifiers with energy-dissipating inlet and perimeter baffles will enhance performance by helping to retain solids in the clarifiers.

- INSTALLATION OF NEW RETURN ACTIVATED SLUDGE (RAS) PUMPS – Installation of three new high-range and two new low-range return activated sludge (RAS) pumps will improve operator flexibility with low-range flows. Enlargement of existing 6-inch sludge piping to 8-inch size will improve hydraulics and assure that net positive suction head (NPSH) requirements for the new RAS pumps are met.

- CONSTRUCTION OF A SOLIDS PROCESSING BUILDING WITH A 150 GPM ROTARY DRUM THICKENER (RDT) AND POLYMER AND FERRIC COMPOUND FEED SYSTEMS – The RDT will thicken sludge to about 5 percent solids prior to anaerobic digestion and room will be provided for a second RDT in the future. Other thickening technologies were considered, but were found to be less cost-effective and less suited to thickening waste activated sludge (WAS) on the scale necessary at the Laurel WWTP. Two polymer systems will be installed to thicken either the waste activated sludge (WAS) or the anaerobically-digested sludge. In order to control any re-release of total phosphorus, a feed system for ferric chloride will be installed.

- SODIUM HYPOCHORITE FEED SYSTEM – Should filamentous bacteria pose a problem in the BNR system, chlorine solution from portable totes will be

readily available to control any filamentous organisms in the activated sludge process.

- GENERAL SCADA IMPROVEMENTS – In order to perform effective BNR treatment, the existing SCADA system would be upgraded to perform process control and required monitoring of the BNR basins. The SCADA system would assist in making aeration adjustments to optimize nutrient removal.

- CIVIL SITE IMPROVEMENTS – General civil site improvements would include construction of paved roadways to the new buildings and structures and Improvements to the storm drain system.

The Phase 2A2 project has an estimated construction cost of $6,989,500 (includes engineering, administration, and construction costs). The Laurel wastewater improvements will be financed with a Treasure State Endowment Program (TSEP) grant of $532,500, City of Laurel funds in the amount of $1,400,000, and a State Revolving Fund (SRF) loan, at a 3 percent interest rate, for the remaining cost of $5,057,000.

The current average residential monthly sewer rate is $59.43 and the projected rate at the time of construction is $60.54. The average monthly sewer rate will increase $1.00 per equivalent dwelling unit (EDU) every August 10th for the next 5 years. The financial impact of this project on the system users is shown in Table IV-4. Based on Environmental Protection Agency (EPA) guidance for project affordability, the proposed project will result in a monthly cost per household that is 2.2% of the median household income and therefore may impose an economic hardship on some households.

TABLE IV-4 – PROJECT AFFORDABILITY

Proposed monthly residential sewer rate*	$60.54
Monthly median household income (mMHI)**	$2,723
User rate as a percentage of mMHI	2.2%

* City of Laurel Uniform Application (March 2, 2012).
** Based on 2000 US Census Bureau data.

V. AFFECTED ENVIRONMENT

A. PLANNING AREA/MAPS

The City of Laurel is located in south-central Montana, approximately 16 miles southwest of Billings, along Interstate 90 (see Figure 1). It is on the western side of Yellowstone County. Most of the City of Laurel, including the wastewater treatment facility, is located outside of the 100-year floodplain and floodway, with the exception of small areas along irrigation ditches within town.

The planning area extends approximately 5 miles in an east-west direction and approximately 3 miles in a north-south direction, with the City of Laurel's densest housing located just west of the center of this area. The Yellowstone River forms a large portion of the southern boundary. The City of Laurel wastewater treatment plant

(WWTP) is located on the southeastern edge of the City, just north of the Yellowstone River. Figure 3 shows the existing WWTP facilities. The proposed facility improvements are shown with respect to existing WWTP processes in Figure 4.

Land surrounding the City of Laurel is largely utilized for crop production and livestock pasture, and the Laurel economy is significantly influenced by this agricultural setting. Major employers in town include the Cenex oil refinery, Montana Rail Link, and Wood's Powr-Grip. Laurel is also considered a bedroom community for people working in nearby Billings.

The planning area considered in the City of Laurel wastewater facility plans is shown in Figure 2. It includes the incorporated boundary of the City of Laurel and the areas of potential development surrounding the City. Most of the future growth is expected to occur adjacent to the north and west City boundaries.

B. POPULATION

According to United States Census data, the population of Laurel in 2010 was 6,718 people. Since 1970, the City of Laurel has experienced moderate population growth, with the population remaining to be approximately 5 percent of the Yellowstone County population. Population projections to 2030 were estimated assuming that Laurel's population would continue to experience moderate growth and make up 5 percent of Yellowstone County's population. Data from the Montana Department of Commerce Census and Economic Information Center project a population of 168,820 for Yellowstone County in the year 2030. The projected population of Laurel for the design year of 2030 is therefore 8,440 people, or 5 percent of the Yellowstone County figure. This represents a population growth of approximately 1 percent per year and is the "lower bounds" growth scenario used in project design.

C. FLOW PROJECTIONS

The 2003 facilities plan provided data to show that there is an increase in summertime flows to the wastewater treatment plant (WWTP) when the many irrigation ditches around Laurel are flowing and groundwater levels have risen. The annual average daily flow measured at the Laurel wastewater treatment plant when the 2003 facilities plan was written was approximately 1.06 million gallons per day (mgd). Wastewater flow data collected between June 2007 and May 2008 indicated a reduced annual average daily flow of approximately 0.81 mgd. This lowered wastewater flow is attributed to Phase 1 replacement of sewer mains in 2007 and 2008 and the subsequent reduction of irrigation water infiltrating into the pipes. The annual average day per capita flow in 2007-2008 decreased to 117 gallons per capita per day (gpcd) from 170 gpcd in 1998-2001.

Flow rates measured outside the irrigation season have shown a per person wastewater contribution of 115 gpcd. This value is representative of a condition where infiltration is minimal. In order to be more conservative, the selected planning value for annual average day in the 2009 facilities plan update was chosen to be 130 gpcd. With a design population of 8,440 people, the design average daily flow is therefore 1.10 mgd, with a peak hourly flow of 2,290 gpm. These design flows were incorporated into the 2011 Preliminary Design Report and will be used in project design calculations.

D. NATURAL FEATURES

The topography in the area of Laurel consists of gently sloping floodplains and alluvial fans rising to local terraces. Soils are generally sandy loams, silty loams, and silty clay loams. Groundwater elevations fluctuate though the year and can be only four to five feet below the ground surface during the irrigation season. Native vegetation includes grasses, sagebrush, cottonwoods, willows, cattails, and sedges.

The Yellowstone River lies south of the City, but bisects a small portion of the service area. The floodplain is located generally to the south of the river in the area of Laurel, since the northern bank is steeper.

The Yellowstone River is in a transition zone between B-1 and B-2 waters at the surface water intake of the City of Laurel's public water supply. This point is approximately one-half mile upstream of the Laurel wastewater discharge point. In the area of the WWTP, the Yellowstone River is classified as a B-2 stream, which is suitable for drinking, culinary, and food processing purposes, after conventional treatment; bathing, swimming, and recreation; growth and marginal propagation of salmonid fishes and associated aquatic life, waterfowl and furbearers; and agricultural and industrial water supply.

According to the MDEQ Clean Water Act Information Center, this stretch of the Upper Yellowstone River at the WWTP is fully supporting of agriculture and not supporting of aquatic life and primary contact recreation. The Yellowstone River is on the 2012 303(d) list of impaired streams for chlorophyll-a, unknown impairments, nitrate/nitrite, oil and grease, other anthropogenic substrate alterations, and physical substrate habitat alterations. The probable sources of impairment are crop production, channelization, municipal point source discharges, and stream bank modifications/destabilization.

VI. ENVIRONMENTAL IMPACTS OF PROPOSED PROJECT

A. DIRECT AND INDIRECT ENVIRONMENTAL IMPACTS

- Land Use – The proposed treatment plant alternatives will occur within the footprint of the existing Laurel wastewater treatment plant (WWTP) and are therefore consistent with existing land use. Prime farmland will not be impacted by the proposed project.

2. Floodplain – No alterations to the floodplain are anticipated as a result of the proposed WWTP improvements. The Montana Department of Natural Resources has been notified of this project and asked to reply with any comments. See Section IX Agencies Consulted of this report for a summary of their comments.

3. Wetlands – There are no wetlands in the area of any of the proposed improvements. The Army Corps of Engineers has been notified of this project and asked to reply with any comments. See Section IX Agencies Consulted of this report for a summary of their comments.

4. Vegetation – The proposed improvements will not impact any plant species of concern, since all improvements will occur within the immediate vicinity of the existing WWTP on previously disturbed areas. Any vegetation disturbed during construction will be reseeded.

5. Cultural Resources – The proposed improvements will all occur within previously disturbed areas and cultural resources will not be impacted. Montana's State Historic Preservation Office has been notified of this project and asked to reply with any comments. See Section IX Agencies Consulted of this report for a summary of their comments.

6. Fish and Wildlife – The proposed improvements will all occur within previously disturbed, urbanized areas and therefore fish and wildlife resources will not be significantly impacted. The switch to ultraviolet disinfection from chlorination of the effluent will eliminate discharge of chlorine to fish habitat. The sewer outfall is proposed to remain in the same location. The Montana Department of Fish, Wildlife and Parks and the U.S. Fish and Wildlife Service have been notified of this project and asked to reply with any comments. See Section IX Agencies Consulted of this report for a summary of their comments.

7. Water Quality – Water quality will improve due to the proposed project. The proposed project will prevent water quality standards violations and provide better treatment of the wastewater. Ammonia toxicity and high fecal coliform numbers should not occur in the receiving stream due to the wastewater with the proposed system. The proposed new use of ultraviolet disinfection (UV) will improve the quality of the effluent discharged to the Yellowstone River by eliminating the discharge of chlorinated effluent. The new UV system will continue to protect water quality by providing adequate disinfection to meet permit limits for *E. coli*.

   The DEQ is currently working on nutrient standards development for large rivers, including the Yellowstone River. It is possible that the nutrient standards and potential ramifications to nutrient Montana Pollutant Discharge Elimination System (MPDES) permit levels would occur prior to the Total Maximum Daily Load (TMDL) and associated waste load allocation (WLA) integration requirements into the MPDES permit. Because neither nutrient standards nor a WLA based on a TMDL are in place on the stretch of the Yellowstone River near Laurel, the facility cannot be expected at this time to be designed and constructed to meet the future (and unknown) MPDES nutrient limits. However construction of the proposed improvements is a necessary first step that will allow the facility to meet the anticipated stricter nutrient limits in the MPDES permit.

   The Laurel WWTP discharges to the Yellowstone River which is listed on the State's 2012 303(d) list of impaired water bodies (i.e., water bodies that do not support a beneficial use). Causes of impairment include: chlorophyll-a, unknown impairments, nitrate/nitrite, oil and grease, other anthropogenic substrate alterations, and physical substrate habitat alterations. Probable sources of the impairment include: crop production, channelization, municipal point source discharges, and stream bank modifications/destabilization. Some of the water quality problems in the Yellowstone River can be associated with pollutants that are discharged from the WWTP, particularly nutrients.

8. Air Quality –Short-term negative impacts on air quality will occur during construction in the form of dust and fumes from heavy equipment. These impacts can be alleviated at the treatment plant, where employees and construction workers can use face masks to protect themselves, if necessary. Proper construction practices, such as watering of the soils, will minimize the problem. The contractor will be responsible for dust control throughout the project.

9. Public Health – Elimination of the gas chlorination system will eliminate a health and safety concern for the operators and the surrounding environment. Improved effluent quality with respect to reduced chlorine, fecal bacteria, and nutrients will have a beneficial effect on public and environmental health.

10. Energy – A direct short-term impact of energy resources will be consumed during the construction phase. In the long-term, energy use will occur with expansion of the biological treatment system and UV system. Energy consumption will be minimized as much as possible through the use of energy-efficient equipment (pumps, blowers, lighting, etc.).

11. Noise – There will be some noise from the heavy equipment during construction. Laurel WWTP employees and the construction workers can use ear protection during the construction period, as necessary. Construction will be limited to normal daytime hours to avoid early morning or late evening construction disturbances.

12. Sludge Disposal – The project will not result in any changes to sludge disposal. Sludge from the anaerobic digesters is dried in the sludge drying beds and then disposed of in the Billings landfill, in accordance with 40 CFR Part 258 Criteria for Municipal Solid Waste Landfills, which regulates the placement of sludge in landfills. Specific requirements for landfill of sewage sludge may include: toxicity characteristic leaching procedure test results, paint filter test (moisture content), vector attraction reduction limitations, and record-keeping requirements.

13. Growth – The 2030 design population is conservatively based on a "lower bounds" growth rate of approximately 1 percent per year. Improvements to the WWTP will be a positive feature for the community.

    Improvements to the WWTP may result in secondary impacts that are associated with the growth of the community. This project would allow the City to manage its growth in a proactive manner and promote urbanization within its service area. The anticipated increase in population and development in the service area would result in increased flows to the WWTP. Secondary impacts may include impacts to housing, commercial development, agricultural lands, solid waste, transportation, and utilities.

14. Cumulative Effects – Expansion of the plant may result in secondary and cumulative impacts associated with the growth of the community. Growth impacts include: increased air emissions from additional traffic, increased water consumption, increased discharge of treated effluent into the Yellowstone River, and possible loss of agricultural and rural land uses. These impacts will need to be managed and minimized as much as possible through City policies and proper community planning.

15. Environmental Justice – Environmental Justice Executive Order 12898: The proposed project will not result in disproportionately high or adverse human health or environmental effects on minority or low income populations. The economic impact will ultimately affect all of the users of the system because of the increase in service costs due to the project costs. However, no disproportionate effect among any portion of the community is expected.

B. UNAVOIDABLE ADVERSE IMPACTS

Short-term, construction-related impacts (i.e., noise, dust, etc.) will occur, but will be minimized through proper construction management. Energy consumption during construction cannot be avoided. Some areas of construction may require localized dewatering. Improvements will be timed to coincide with low groundwater periods and lower wastewater flows.

VII. PUBLIC PARTICIPATION

There has been significant public and City Council involvement regarding the proposed wastewater system improvements over the years. The first public/City Council information meetings and work sessions regarding the City's Wastewater Facilities Plan began in 2002. Current conditions and future needs of the wastewater facility were explained. Public input on goals and strategies was solicited. At the time, the top priority was determined to be the rehabilitation/replacement of old trunk mains which contributed significant infiltration/inflow to the wastewater treatment plant. These improvements were completed in 2007.

In 2006, project phasing, construction costs, and the alternatives analysis in the 2003 Wastewater Facilities Plan were reevaluated. This updated facility plan was presented by Morrison-Maierle, Inc. at a public/City Council work session on March 28, 2006 and again to the public at a meeting on May 1, 2006.

In 2009 an update of the 2003 and 2006 facility plan documents was determined necessary to incorporate the new rate structure for funding of the project, to reassess project phasing, and consider more stringent effluent criteria. Public meetings were held on December 9th and 30th, 2008 and January 13th and 27th, 2009 to present this wastewater planning information. A public meeting to review the 2009 Laurel Wastewater Facilities Plan Upgrade was held on March 17th, 2009.

The proposed wastewater treatment plant (WWTP) improvements that are addressed in this environmental assessment reflect new assessments and alternative analyses from the 2010 Wastewater Treatment Plant Improvements Evaluation and 2011 Preliminary Design Report. The current proposed wastewater treatment plant project was presented by Great West Engineering at City Council workshops on January 10 and January 25, 2012. The rate increase needed to fund the WWTP improvements was discussed at the January 25th meeting. The public is notified of all meeting dates and agendas through the local newspaper and through posting at the City Hall. No comments were made or questions were asked about the proposed project.

VIII. REFERENCE DOCUMENTS

The following documents were utilized in the environmental review of this project and are considered to be part of the project file:

- City of Laurel Wastewater Facilities Plan, April 2003, prepared by Morrison-Maierle, Inc.
- 2006 Laurel Wastewater Facilities Plan Update, May 2006, prepared by Morrison-Maierle, Inc.
- 2009 Laurel Wastewater Facilities Plan Update, February 2009, prepared by Morrison-Maierle, Inc.
- Wastewater Treatment Evaluation, Wastewater Treatment Plant Improvements, City of Laurel, Montana, June 2010, prepared by Great West Engineering and Black & Veatch.
- Preliminary Design Report – Biological Nutrient Removal Upgrade and Expansion of the Laurel Wastewater Treatment Plant, December 2011, prepared by Great West Engineering and Tetra Tech.
- Water and Sewer Rate Study, City of Laurel, Montana, August 2011, prepared by Great West Engineering.
- Technical Memorandum, City of Laurel, Montana, WWTP Discharge Limit Analysis, prepared by Morrison-Maierle, Inc., August 29, 2008.
- American FactFinder Fact Sheet, US Census Bureau, Internet website.
- Statement of Basis for Montana Pollutant Discharge Elimination System Permit No. MT0020311, City of Laurel, Montana Department of Environmental Quality, March 2009.
- Uniform Application Form for Montana Public Facility Projects, City of Laurel, March 2, 2012.

IX. AGENCIES CONSULTED

The following agencies were contacted regarding the City of Laurel Wastewater Facilities Plan, April 2003, which determined the basis for the proposed wastewater improvements project. Because the 2006, 2009, 2010, and 2011 facility plan update documents addressed project components in the same location as those in the 2003 City of Laurel Wastewater Facilities Plan and project changes did not affect the environment differently, it was determined that the original response letters from the environmental agencies are still valid.

1. The Montana Department of Fish Wildlife and Parks (FWP). The FWP stated that they did not have any comments regarding the proposed infrastructure improvements.

2. The United States Fish and Wildlife Service (FWS). The FWS stated that it did not anticipate adverse impacts to any federally listed, threatened, endangered, candidate, or proposed species. A suggestion was given to avoid and minimize impacts to wetland areas, stream channels, and surrounding vegetation to the greatest extent possible.

3. Montana State Historic Preservation Office (SHPO). SHPO feels that because the project involves replacement of existing infrastructure, the likelihood that cultural resources will be impacted is low. A cultural resource inventory is not recommended at this time. If there is disturbance on

previously undisturbed ground, a cultural resource inventory must be conducted.

4. The United States Army Corps of Engineers (COE). The COE recommends that any above-ground construction subject to flood damage should either be placed above or flood-proofed to a level above the 100-year floodplain elevation. A Section 404 permit may be required if construction activities involve any work in waters of the United States.

5. Department of Natural Resources and Conservation (DNRC). The Floodplain Management Program Manager noted that if the proposed project crosses a designated (regulatory) 100-year floodplain, the project may require a floodplain development permit.

Recommendation for Further Environmental Analysis:

[ ] EIS [ ] More Detailed EA [X] No Further Analysis

Rationale for Recommendation: Through the 2003 City of Laurel Wastewater Facilities Plan and its 2006 and 2009 updates, prepared by Morrison-Maierle, Inc.; the June 2010 Wastewater Treatment Evaluation, prepared by Great West Engineering and Black & Veatch; the December 2011 Preliminary Design Report, prepared by Great West Engineering and Tetra Tech; and the public process involved; the City of Laurel determined that the preferred wastewater improvement alternatives will improve the operation and maintenance capabilities of their existing wastewater system. Through this EA, the MDEQ has verified that none of the adverse impacts of the proposed wastewater system upgrades are significant; therefore an environmental impact statement is not required. The environmental review was conducted in accordance with the Administrative Rules of Montana (ARM) 17.4.607, 17.4.608, 17.4.609 and 17.4.610. This EA is the appropriate level of analysis because none of the adverse effects of the impacts are significant. A Finding of No Significant Impact (FONSI) will be issued and legally advertised in the local newspaper and distributed to a list of interested agencies. Comments regarding the project will be received for 30 days before final approval is granted.

EA Prepared by:

Michele Marsh — 7/31/2012

Michele Marsh, P.E. — Date

EA Approved by:

Mike Abrahamson — 7/31/12

Mike Abrahamson, P.E. — Date


CANADA
MONTANA
NORTH DAKOTA
SOUTH DAKOTA
WYOMING
IDAHO
Cranbrook
Bonners Ferry
Eureka
GLACIER NATIONAL PARK
Sandpoint
Libby
Kalispell
Coeur d'Alene
Thompson Falls
Kellogg
Polson
Cut Bank
Browning
Shelby
Choteau
Fort Benton
Great Falls
Havre
Malta
Glasgow
Scobey
Fort Peck
Wolf Point
Williston
Sidney
Jordan
Glendive
Beach
Lewistown
Missoula
Helena
White Sulphur Springs
Harlowton
Roundup
Miles City
Baker
Bowman
Buffalo
Orofino
Hamilton
Anaconda
Butte
Grangeville
McCall
Cascade
Challis
Dillon
Bozeman
Livingston
Laurel
Billings
Hardin
Broadus
Red Lodge
Cody
West Yellowstone
YELLOWSTONE NATIONAL PARK
Belle Fourche
Sundance
Spearfish
Lead
Gillette
Buffalo
Newcastle
0 40 mi
City of Laurel

FIGURE 1

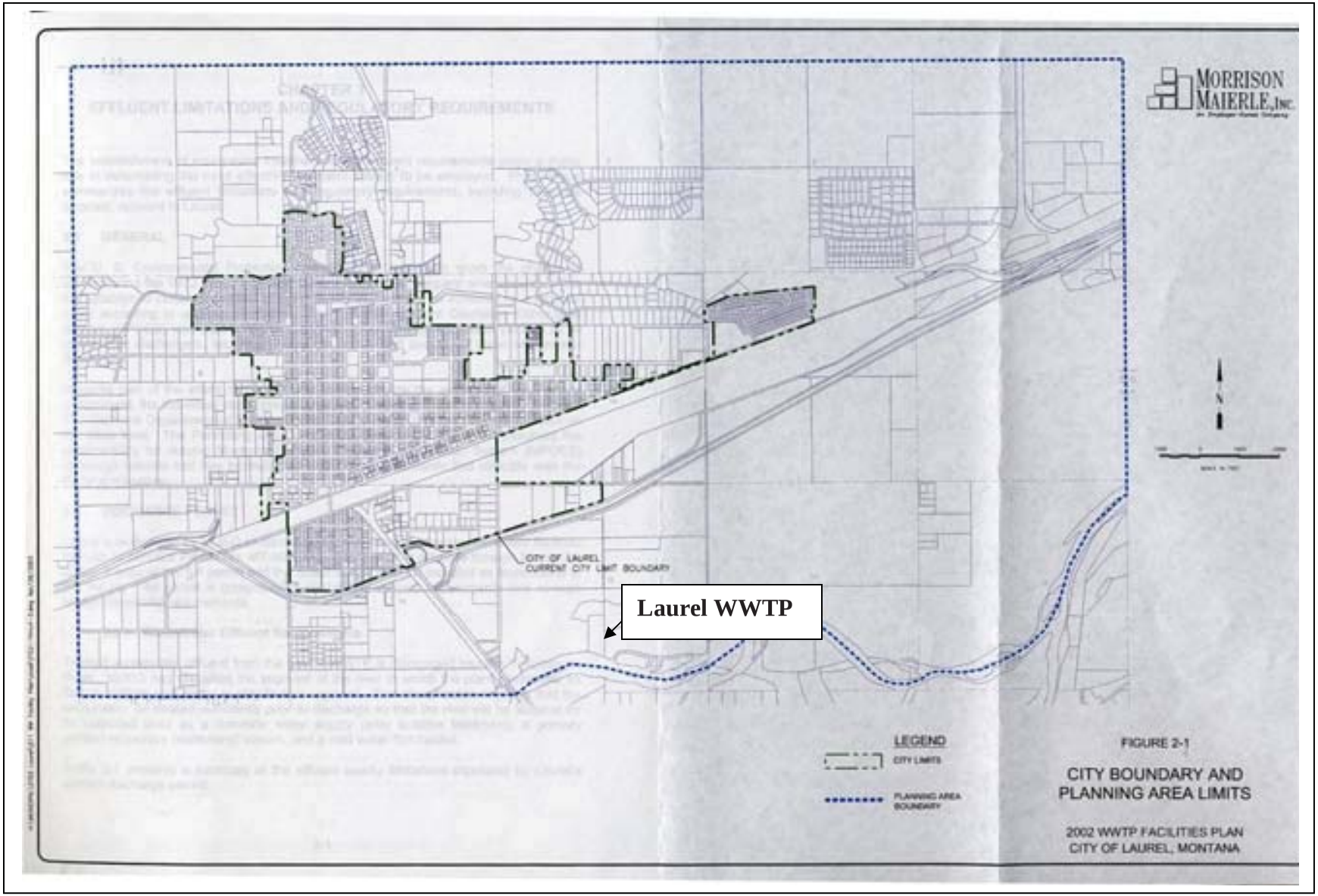
MORRISON MAIERLE, Inc.
CITY OF LAUREL
CURRENT CITY LIMIT BOUNDARY
Laurel WWTP
LEGEND
CITY LIMITS
PLANNING AREA BOUNDARY
FIGURE 2-1
CITY BOUNDARY AND PLANNING AREA LIMITS
2002 WWTP FACILITIES PLAN
CITY OF LAUREL, MONTANA

FIGURE 2


MORRISON MAIERLE, Inc.
RBC UNITS
CONTROL BUILDING
PLANT BOUNDARY
HEADWORKS
ENTRANCE
SLUDGE DRYING BEDS
SLUDGE DRYING BEDS
FIGURE 6-2
LAUREL WASTEWATER TREATMENT PLANT SITE
2002 WWTP FACILITIES PLAN
CITY OF LAUREL, MONTANA

FIGURE 3

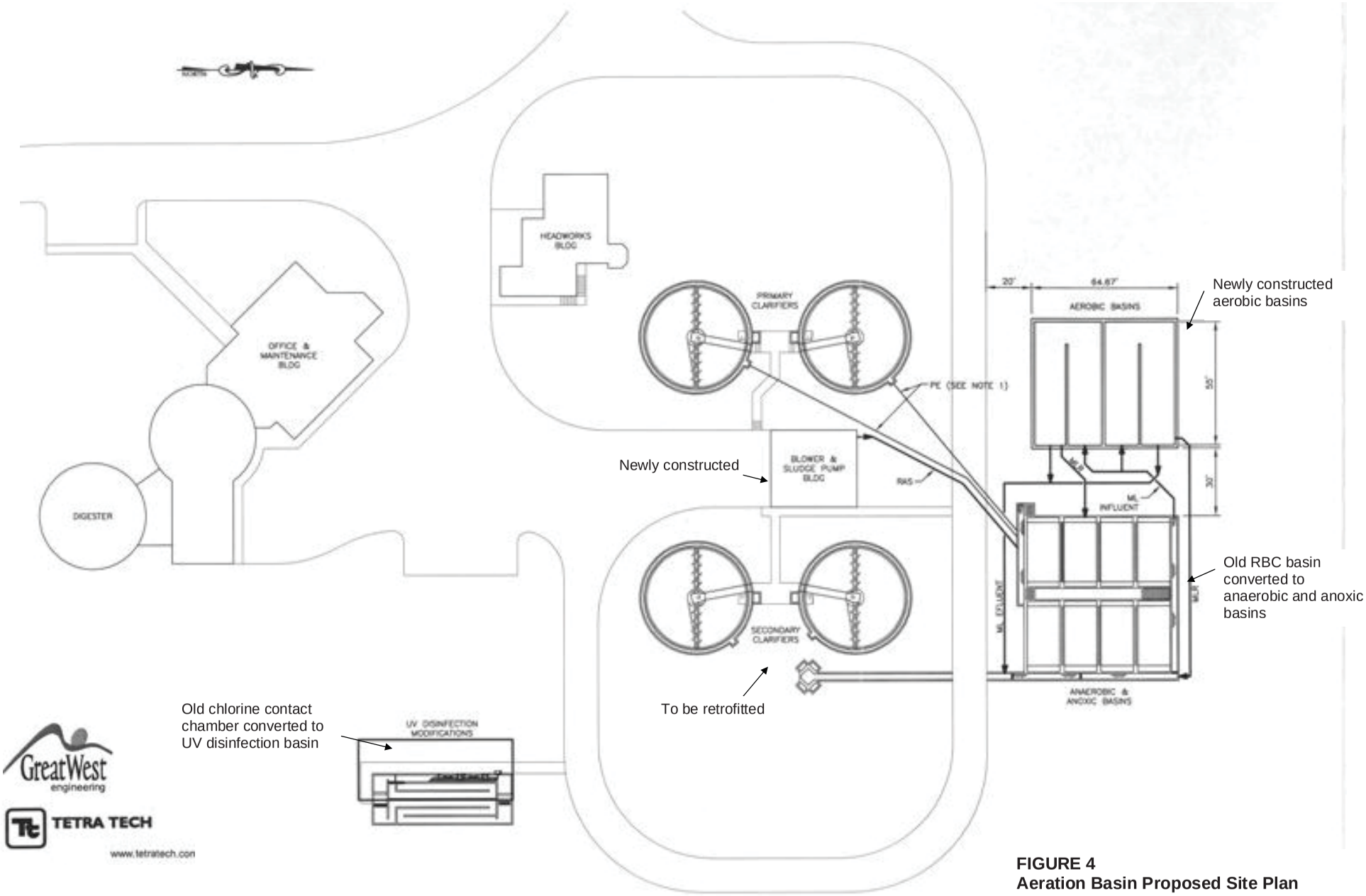

FIGURE 4
Aeration Basin Proposed Site Plan
Site Plan 1”=50’