NPDES PERMIT NO. NM0024848
FACT SHEET

FOR THE DRAFT NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT TO DISCHARGE TO WATERS OF THE UNITED STATES

APPLICANT

Village of Cuba WWTP
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ISSUING OFFICE

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DATE PREPARED

May 19, 2021

PERMIT ACTION

Proposed re-issuance of the current permit issued on September 30, 2015, with an effective date of November 1, 2015, and an expiration date of October 31, 2020.

RECEIVING WATER – BASIN

Rio Puerco (Arroyo Chijuilla) – Rio Grande Basin (Segment 20.6.4.131)

DOCUMENT ABBREVIATIONS

In the document that follows, various abbreviations are used. They are as follows:

4Q3	Lowest four-day average flow rate expected to occur once every three-years
BAT	Best available technology economically achievable
BCT	Best conventional pollutant control technology
BPT	Best practicable control technology currently available
BMP	Best management plan
BOD	Biochemical oxygen demand (five-day unless noted otherwise)
BPJ	Best professional judgment
CBOD	Carbonaceous biochemical oxygen demand (five-day unless noted otherwise)
CD	Critical dilution
CFR	Code of Federal Regulations
cfs	Cubic feet per second
COD	Chemical oxygen demand
COE	United States Corp of Engineers
CWA	Clean Water Act
DMR	Discharge monitoring report
DO	Dissolved oxygen
ELG	Effluent limitation guidelines
EPA	United States Environmental Protection Agency
ESA	Endangered Species Act
FWS	United States Fish and Wildlife Service
mg/l	Milligrams per liter
ug/l	Micrograms per liter
lbs	Pounds
MG	Million gallons
MGD	Million gallons per day
ML	Method minimum level
NMAC	New Mexico Administrative Code
NMED	New Mexico Environment Department
NMIP	New Mexico NPDES Permit Implementation Procedures
NMWQS	New Mexico State Standards for Interstate and Intrastate Surface Waters
NOEC	No observable effect concentration
NPDES	National Pollutant Discharge Elimination System
MQL	Minimum quantification level
O&G	Oil and grease
POTW	Publicly owned treatment works
RP	Reasonable potential
SS	Settleable solids
SSM	Sufficiently Sensitive Method
SIC	Standard industrial classification
s.u.	Standard units (for parameter pH)
SWQB	Surface Water Quality Bureau
TDS	Total dissolved solids
TMDL	Total maximum daily load
TRC	Total residual chlorine
TSS	Total suspended solids
UAA	Use attainability analysis
USGS	United States Geological Service
WLA	Waste Load allocation
WET	Whole effluent toxicity
WQCC	New Mexico Water Quality Control Commission
WQMP	Water Quality Management Plan
WWTP	Wastewater treatment plant

I. CHANGES FROM THE PREVIOUS PERMIT

The changes from the current permit issued on September 30, 2015, with an effective date of November 1, 2015, and an expiration date of October 31, 2020, include:

- Substitute unit (MPN) for E. coli bacteria has been added.
- Monitoring requirement for DO has been removed.
- Sample type for WET has been changed to 24-hr. composite from 3-hr composite.

II. APPLICANT LOCATION and ACTIVITY

As described in the application, the facility (Latitude 35° 59' 35" North and Longitude 106° 59' 13" West) is located at Mile Maker 2 on NMSR 197, Cuba, Sandoval County, New Mexico.

Under the SIC code 4952, the applicant operates Village of Cuba WWTP, which has a design flow of 0.144 MGD providing sanitary services for approximately 575-population. The plant is an Aero-Mod Extended WWTP, which is fundamentally an activated sludge process utilizing the sequential oxidation (SEQUOX) biological nutrient removal process, a patent nutrient removal process. Provided levels of treatment include primary, secondary and advanced ones. Effluent is UV-disinfected before seasonally discharged to the Rio Puerco, flowing about 12 miles to Jemez Pueblo, between November 1 and March 31. Other times, effluent is reused for land application under NMED ground water permit NMPD-483. Sewage sludge is dewatered and dried before transported to a site just north of the plant for land application in future. A map of the facility is attached.

III. EFFLUENT CHARACTERISTICS

Data submitted in Form 2A is as follows:

Parameter	**Max**	**Avg**
	(mg/l unless noted)	
Flow (MGD)	0.11	0.06
pH, minimum, standard units (s.u.)	7.56	NA
pH, maximum, standard units (s.u.)	7.99	NA
Temperature (F), winter	47	
Temperature (F), summer	67	
Biochemical Oxygen Demand, 5-day (BOD_5)	67	18.35
E. coli (cfu/100 ml)	<1	<1
Total Suspended Solids (TSS)	16	7.5
Ammonia (as N)	ND	ND
TRC	NA	NA
DO	9.4	4.4
Total Kjeldahl Nitrogen (TKN)	1.7	1.7
Nitrate + Nitrite Nitrogen	11	8.2
Oil & Grease	5.99	1.99
Phosphorus (Total)	1.2	0.74
TDS	1010	996

Since November 1, 2015 there have been exceedances in DMR (available upon request) as follows:

Parameter	**Date Report**	**Exceedance, 30-day average, mg/L**	**Exceedance, daily max., mg/L**
pH	12/31/19	1 exceedance (min.)	

Nitrogen, total	12/31/16, 3/31/17	2 exceedances	2 exceedances
Ammonia, total	12/31/16 to 11/30/19	6 exceedances	6 exceedances
Phosphorus, total	11/30/16 to 11/30/19	5 exceedances	5 exceedances
E. coli bacteria	4/30/16, 6/30/17	1 exceedance	2 exceedances
TSS, % removal	10/31/16 to 11/30/19	5 exceedances	

IV. REGULATORY AUTHORITY/PERMIT ACTION

In November 1972, Congress passed the Federal Water Pollution Control Act establishing the NPDES permit program to control water pollution. These amendments established technology-based or end-of-pipe control mechanisms and an interim goal to achieve "water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water"; more commonly known as the "swimmable, fishable" goal. Further amendments in 1977 of the CWA gave EPA the authority to implement pollution control programs such as setting wastewater standards for industry and established the basic structure for regulating pollutants discharges into the waters of the United States. In addition, it made it unlawful for any person to discharge any pollutant from a point source into navigable waters, unless a permit was obtained under its provisions. Regulations governing the NPDES permit program are generally found at 40 CFR §122 (program requirements & permit conditions), §124 (procedures for decision making), §125 (technology-based standards) and §136 (analytical procedures). Other parts of 40 CFR provide guidance for specific activities and may be used in this document as required.

It is proposed that the permit be reissued for a 5-year term following regulations promulgated at 40 CFR §122.46(a).

V. DRAFT PERMIT RATIONALE AND CONDITIONS

A. OVERVIEW of TECHNOLOGY-BASED VERSUS WATER QUALITY STANDARDS-BASED EFFLUENT LIMITATIONS AND CONDITIONS

Regulations contained in 40 CFR §122.44 NPDES permit limits are developed that meet the more stringent of either technology-based effluent limitation guidelines, numerical and/or narrative water quality standard-based effluent limits, or the previous permit.

Technology-based effluent limitations are established in the proposed draft permit for TSS and BOD and percent removal for each. Water quality-based effluent limitations are established in the proposed draft permit for E. coli bacteria, pH, TRC, nutrients and total ammonia.

B. TECHNOLOGY-BASED EFFLUENT LIMITATIONS/CONDITIONS

1. General Comments

Regulations promulgated at 40 CFR §122.44(a) require technology-based effluent limitations to be placed in NPDES permits based on ELGs where applicable, on BPJ in the absence of guidelines, or on a combination of the two. In the absence of promulgated guidelines for the discharge, permit conditions may be established using BPJ procedures. EPA establishes limitations based on the following technology-based controls: BPT, BCT, and BAT. These levels of treatment are:

BPT - The first level of technology-based standards generally based on the average of the best existing performance facilities within an industrial category or subcategory.

BCT - Technology-based standard for the discharge from existing industrial point sources of conventional pollutants, including BOD_5, TSS, *E. coli* bacteria, pH, and O&G.

BAT - The most appropriate means available on a national basis for controlling the direct discharge of toxic and non-conventional pollutants to navigable waters. BAT effluent limits represent the best existing performance of treatment technologies that are economically achievable within an industrial point source category or subcategory.

2. Effluent Limitation Guidelines

The facility is a POTW/POTW-like that has technology-based limits established at 40 CFR Part 133.102, Secondary Treatment Regulation. Pollutants with limits established in this Chapter are BOD_5, TSS and pH. BOD_5 limits of 30 mg/l for the 30-day average and 45 mg/l for the 7-day average and 85% percent (minimum) removal are found at 40 CFR §133.102(a). TSS limits; also 30 mg/l for the 30-day average and 45 mg/l for the 7-day average, average and 85% percent (minimum) removal are found at 40 CFR §133.102(b). The limit for pH is 6-9 s.u. based on 40 CFR §133.102(c).

Regulations at 40 CFR §122.45(f)(1) require all pollutants limited in permits to have limits expressed in terms of mass such as pounds per day. When determining mass limits for POTWs or similar, the plant's design flow is used to establish the mass load. Mass limits are determined by the following mathematical relationship:

Loading in lbs/day = pollutant concentration in mg/l * 8.345 (lbs)(l)/(mg)(MG) * design flow in MGD

30-day average BOD/TSS loading = 30 mg/l * 8.345 (lbs)(l)/(mg)(MG) * 0.144 MGD = 36 lbs/day
7-day average BOD/TSS loading = 45 mg/l * 8.345 (lbs)(l)/(mg)(MG) * 0.144 MGD = 54 lbs/day

A summary of the technology-based limits (same ones previously) for the facility is:

Parameter	**30-day Avg, lbs/day, unless noted**	**7-day Max, lbs/day, unless noted**	**30-day Avg, mg/l, unless noted**	**7-day Max, mg/l, unless noted**
BOD_5	36	54	30	45
BOD_5, % removal[1]	≥ 85	---	---	---
TSS	36	54	30	45
TSS, % removal[1]	≥ 85	---	---	---
pH	N/A	N/A	6.0 to 9.0 s.u.	6.0 to 9.0 s.u.

[1] % removal is calculated using the following equation: [(average monthly influent concentration – average monthly effluent concentration) ÷ average monthly influent concentration] * 100.

3. Pretreatment Regulation

Not applicable

C. WATER QUALITY BASED LIMITATIONS

1. General Comments

Water quality based requirements are necessary where effluent limits more stringent than technology-based limits are necessary to maintain or achieve federal or state water quality limits. Under Section 301(b)(1)(C) of the CWA, discharges are subject to effluent limitations based on Federal or State/Tribe WQS. Effluent limitations and/or conditions established in the draft permit are in compliance with applicable State/Tribe WQS and applicable State/Tribe water quality management plans to assure that surface WQS of the receiving waters are protected and maintained or attained.

2. Implementation

The NPDES permits contain technology-based effluent limitations reflecting the best controls available. Where these technology-based permit limits do not protect water quality or the designated uses, additional water quality-based effluent limitations and/or conditions are included in the NPDES permits. State/Tribe narrative and numerical water quality standards are used in conjunction with EPA criterion and other available toxicity information to determine the adequacy of technology-based permit limits and the need for additional water quality-based controls.

3. State Water Quality Standards

The general and specific stream standards are provided in NMWQS (20.6.4 NMAC approved on September 12, 2018). The discharge is to Rio Puerco, Rio Grande Basin (Segment 20.6.4.131). The designated uses of the receiving water are warmwater aquatic life, irrigation, livestock watering, wildlife habitat and primary contact.

4. Permit Action - Water Quality-Based Limits

Regulations promulgated at 40 CFR §122.44(d) require limits in addition to, or more stringent than effluent limitation guidelines (technology based). State WQS that are more stringent than effluent limitation guidelines are as follows:

a. pH

For marginal warmwater aquatic life and primary contact, criteria for pH is between 6.6 and 9.0 s.u. pursuant to 20.6.4.900.D and H(6) NMAC.

b. Bacteria

For primary contact, criteria for E. coli bacteria is at 126 cfu (or MPN)/100 ml monthly geometric mean and 410 cfu (or MPN)/100 ml daily maximum pursuant to 20.6.4.900.D NMAC.

c. TRC

For wildlife habitat, criterion for TRC is 11 ug/l pursuant to 20.6.4.900.G NMAC. Effluent is ultra-violet disinfected before discharged; so, this limit is applicable when chlorine is introduced or used the treatment process. If a test result is less than the MQL specified in Part II.A of the permit it can be reported as zero for compliance purpose.

d. Toxics

The CWA in Section 301 (b) requires that effluent limitations for point sources include any limitations necessary to meet water quality standards. Federal regulations found at 40 CFR §122.44 (d) state that if a discharge poses the reasonable potential to cause an in-stream excursion above a water quality criteria, the permit must contain an effluent limit for that pollutant.

All applicable facilities are required to fill out appropriate sections of the Form 2A and 2S, to apply for an NPDES permit or reissuance of an NPDES permit. The new form is applicable not only to POTWs, but also to facilities that are similar to POTWs, but which do not meet the regulatory definition of "publicly owned treatment works" (like private domestics, or similar facilities on Federal property). The forms were designed and promulgated to "make it easier for permit applicants to provide the necessary information with their applications and minimize the need for additional follow-up requests from permitting authorities," per the summary statement in the preamble to the Rule. These forms became effective December 1, 1999, after publication of the final rule on August 4, 1999, Volume 64, Number 149, pages 42433 through 42527 of the FRL.

The facility is a minor POTW/POTW-like, which is not required to submit data for toxic pollutants listed in Tables C and D of Form 2A. No evaluation for the toxic pollutants is performed as a result.

e. DO

The State of New Mexico WQS criterion applicable to the warm-water aquatic life and warmwater designated use is at least 5 mg/L for dissolved oxygen. As a part of the permitting process, EPA used the LA-QUAL water quality model, which is a steady-state one-dimensional model which assumes complete mixing within each modeled element, to develop permit parameters for the protection of the State of New Mexico surface water WQS for DO (i.e., 5 mg/L). Primarily based on the Village of Cuba Wastewater Treatment Plant's design flow (0.144 MGD) and the critical flow of the receiving water (0.965 cfs), various BOD_5 factors including BOD_5 Secondary Treatment Standards were considered and simulated to achieve the DO criterion. A complete characterization of Rio Puerco receiving stream (i.e., water quality and hydrodynamic data) was not available. Where data were not available, estimates and assumptions are made. The following is a summary of model inputs.

The Village of Cuba Wastewater Treatment Plant's design flow is 0.0063 m3/sec (0.144 MGD). The discharge location provided in the permit application is located at Latitude 35° 59' 35" N (35.993), and Longitude 106° 59' 13" W (-106.987). Other effluent parameters provided in the permittee's application and applied in the model include Ammonia (Avg: 1 mg/L), DO (Avg: 4.4 mg/L) and effluent temperature (90F).

NMED provided the following information. The critical low flow of Rio Puerco receiving stream is approximately 0.0273 m3/sec (0.965 ft3/sec). Other parameters applied in the model include ambient temperature (12.45 C). Ammonia (Avg: 0.1 mg/L), DO (Avg: 5 mg/L), Nitrate plus Nitrite Nitrogen (Avg: 0.1mg/L) and Ambient E. Coli of 18 CFU/100ml, and the receiving stream average depth of 1 foot (0.33 meters) were assumed since no data available.

EPA used the EPA's Environmental Justice Screening and Mapping Tool (Version 2019) to estimate the average elevation of the study area and average width of Rio Puerco receiving stream. The average elevation is approximately 2105.56 meter (6908 feet). The average width of Rio Puerco receiving stream

is approximately 3 meters (12 ft). And, the studied Rio Puerco segment length is approximately 13.62 kilometers (8.46 miles).

The model results show no excursion of the receiving stream DO standard of 5 mg/L when the BOD_5 limits of 30 mg/l for monthly average and 45 mg/l for 7-day maxima were applied (see graph with 30/45 mg/L BOD_5 in Appendix 1; other detail information is available upon request).

The model results are based on the assumptions and default values as explained and presented above. Should these conditions change, the model should be updated to provide a more accurate assessment of the water quality within the receiving water body. At this time, the technology-based BOD_5 limits are protective of the DO for this water segment. DO limitation is not warranted; EPA removes the previous required monitoring of DO in this draft permit. DO will be evaluated again in the next permit renewal if applicable.

D. MONITORING FREQUENCY FOR LIMITED/MONITORED PARAMETERS

Regulations require permits to establish monitoring requirements to yield data representative of the monitored activity, 40 CFR §122.48(b), and to assure compliance with permit limitations, 40 CFR §122.44(i)(1). EPA established the monitoring frequency based on Table 9 (page 34 of the NMIP) for design flow between 0.1 and 0.5 MGD and history compliance.

Parameter	Frequency	Sample Type
Flow	Daily	Totalized Meter
pH	5/week	Instantaneous Grab
BOD_5, TSS	2/month	Grab
% Removal	Monthly	Calculation
TRC	Daily*	Instantaneous Grab
E. coli Bacteria	2/month	Grab
Nutrients, total ammonia	1/week	3-hour Composite

* TRC shall be measured during periods when chlorine is used as either backup bacteria control or when disinfection of plant treatment equipment is required.

E. WHOLE EFFLUENT TOXICITY

Procedures for implementing WET terms and conditions in NPDES permits are contained in the NMIP. Table 11 (page 42) of the NMIP outlines the type of WET testing for different types of discharges. The NMIP directs the WET testing requirement for this permit to be a 7-day chronic test using *Ceriodaphnia dubia* and *Pimephales promelas,* once per year with a critical dilution of 19%. During the previous permit cycle, there was no toxicity exhibited by any of the yearly chronic tests conducted. The requirement to monitor and report will continue in this renewed permit.

The proposed permit requires five (5) dilutions in addition to the control (0% effluent) to be used in the toxicity tests based on a 0.75 dilution series. These additional effluent concentrations must be 8%, 11%, 14%, 19%, and 25%. The low-flow effluent concentration (critical low-flow dilution) is defined as 19% effluent. The permittee shall limit and monitor discharge(s) as specified below:

WHOLE EFFLUENT TOXICITY (7-Day Chronic Static Renewal/ NOEC)*	VALUE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Ceriodaphnia dubia	Report	Once/Year	24-Hr Composite
Pimephales promelas	Report	Once/Year	24-Hr Composite

*Monitoring and reporting requirements begin on the effective date of this permit. See Part II of the permit for WET testing requirements and limitation conditions. Grab samples are allowed per method, if needed.

VI. TMDL REQUIREMENTS

The receiving water segment 20.6.4.131 NMAC Rio Puerco (Arroyo Chijuilla to northern boundary Cuba) has been listed in 303(d) List. Warmwater aquatic life is not supporting; the water segment is impaired with nutrients and total ammonia. Dissolved aluminum TMDL was withdrawn in 2018. The same 2007 TMDLs were used in the previous permit. Therefore, limits for nutrients and total ammonia are retained in this permit draft. The permit has a standard reopener clause that would allow the permit to be changed if at a later date additional requirements on new or revised TMDLs are completed.

VII. ANTIDEGRADATION

The NMAC, Section 20.6.4.8 “Antidegradation Policy and Implementation Plan” sets forth the requirements to protect designated uses through implementation of the State water quality standards. The limitations and monitoring requirements set forth in the draft permit are developed from the Tribe/State water quality standards and are protective of those designated uses. Furthermore, the policy sets forth the intent to protect the existing quality of those waters, whose quality exceeds their designated use. The permit requirements and the limits are protective of the receiving water, which is protective of the designated uses of that water, NMAC Section 20.6.4.8.A.2.

VIII. ANTIBACKSLIDING

The proposed permit is consistent with the requirements to meet Antibacksliding provisions of the Clean Water Act, Section 402(o) and 40 CFR 122.44(l)(2)(i)(B), which state in part that interim or final effluent limitations must be as stringent as those in the previous permit, unless information is available which was not available at the time of permit issuance. No draft permit condition is less stringent than the previous one.

IX. ENDANGERED SPECIES CONSIDERATIONS

According to a report updated on April 5, 2021 for Sandoval County, NM obtained from http://ecos.fws.gov/ipac, there are six endangered (E) and threatened (T) species: New Mexico Meadow Jumping Mouse (E), Mexican Spotted Owl (T), Southern Willow Flycatcher (E), Yellow-billed Cuckoo (T), Jemez Mountains Salamander (E) and Rio Grande Silvery Minnow (E). All species were listed in the previous permit with determination of “no effect”. According to the report, there are no critical habitats for all the species downstream from the discharging facility.

In accordance with requirements under section 7(a)(2) of the Endangered Species Act, EPA has reviewed this permit for its effect on listed threatened and endangered species and designated critical

habitat. The scope of the Federal Action is limited to the effects of authorizing the discharge and does not include the permittee's decision to cease discharging. After review, EPA has determined that the reissuance of this permit will have "no effect" on listed threatened and endangered species nor will adversely modify designated critical habitat. EPA makes this determination based on the following:

1. EPA has received no additional information since the previous permit issuance which would lead to revision of its determinations.

2. The draft permit is consistent with the States WQS and does not increase pollutant loadings.

3. EPA determines that Items 1, thru 2 result in no change to the environmental baseline established by the previous permit, therefore, EPA concludes that reissuance of this permit will have "no effect" on listed species and designated critical habitat.

X. HISTORICAL and ARCHEOLOGICAL PRESERVATION CONSIDERATIONS

The reissuance of the permit should have no impact on historical and/or archeological sites since no new construction activities are planned in the reissuance.

XI. PERMIT REOPENER

The permit may be reopened and modified during the life of the permit if NMWQS are promulgated or revised. In addition, if the State develops a TMDL, this permit may be reopened to establish effluent limitations for the parameter(s) to be consistent with that TMDL. Modification of the permit is subject to the provisions of 40 CFR §124.5.

XII. VARIANCE REQUESTS

None

XIII. CERTIFICATION

The permit is in the process of certification by the State Agency following regulations promulgated at 40 CFR 124.53. A draft permit and draft public notice will be sent to the District Engineer of COE, to the Regional Director of FWS and to the National Marine Fisheries Service prior to the publication of that notice.

XIV. FINAL DETERMINATION

The public notice describes the procedures for the formulation of final determinations.

XV. ADMINISTRATIVE RECORD

The following information was used to develop the draft permit:

A. APPLICATION(s)

EPA Application Forms 2A and 2S dated January 6, 2021. Additional information was received on March 30, 2021.

B. 40 CFR CITATIONS

Sections 122, 124, 125, 133, 136, 434

C. STATE OF NEW MEXICO REFERENCES

New Mexico State Standards for Interstate and Intrastate Surface Water, 20.6.4 NMAC, effective September 12, 2018

State of New Mexico 303(d) List for Assessed Stream and River Reaches, 2020-2022

Total Maximum Daily Load (TMDL) for the Rio Puerco Watershed-Part 2, September 21, 2007

D. MISCELLANEOUS

Procedures for Implementing National Pollutant Discharge Elimination System Permits in New Mexico – NMIP, March 15, 2012

NMED emails dated April 15, 2021

Permittee emails dated February 2, 2021, March 30, 2021