

Region 6 - Enforcement & Compliance Assurance Division
INSPECTION REPORT

Inspection Date(s):	01/26/2023	
Media Program:	Water	
Regulatory Program(s)	CWA – NPDES	
Company Name:	Kirtland Air Force Base, 377th Air Base Wing	
Facility Name:	Bulk Fuels Facility	
Facility Physical Location:	2000 Wyoming Blvd. SE	
(city, state, zip code)	Kirtland AFB, NM 87117	
Mailing address:	2000 Wyoming Blvd. SE	
(city, state, zip code)	Kirtland AFB, NM 87117	
County/Parish:	Bernalillo County	
Facility Phone Number	(505) 853-3484	
Facility Contact:	Melissa Clark melissa.clark.8@us.af.mil	Chief, Installation Management
FRS Number:	110070625552	
Identification/Permit Number:	NM0031216	
Media Identifier Number:		
NAICS:		
SIC:	9711, 5629	
Personnel participating in inspection:		
Amy Andrews, P.E.	USEPA/6EN-WMH	Environmental Engineer
Susan Lucas-Kamat	NMED/SWQB	Program Manager, Point Source Regulation Section
Levi Dean	NMED/SWBQ	Inspector/Industrial and Stormwater Team Supervisor
Ryan Wortman	US Air Force	Program Manager
Bernard Bockisch	EA Engineering Science & Technology	Project Manager
Pete Ferrari	EA Engineering Science & Technology	Operator
Chris Segura	US Air Force	AFCEC, Chief
EPA Lead Inspector Signature/Date	AMY ANDREWS Amy Andrews Digitally signed by AMY ANDREWS DN: c=US, o=U.S. Government, ou=Environmental Protection Agency, cn=AMY ANDREWS, 0.9.2342.19200300.100.1.1=68001003655888 Date: 2023.03.15 16:35:42 -06'00'	
Supervisor Signature/Date	ROBERTO BERNIER Roberto Bernier Digitally signed by ROBERTO BERNIER Date: 2023.03.15 17:39:31 -05'00'	

Section I – INTRODUCTION

PURPOSE OF THE INSPECTION

United States (U.S.) Environmental Protection Agency (EPA) Region 6 inspector Amy Andrews and New Mexico Environment Department (NMED) inspectors, Susan Lucas-Kamat and Levi Dean arrived at the Kirtland Air Force Base (KAFB) Truman Gate at 9:00 AM on January 26, 2023, for an announced inspection. We were escorted onto KAFB by Ryan Wortman, the KAFB Program Manager for the Bulk Fuels Facility Groundwater Treatment System (GWTS). We arrived at the GWTS building at 9:50 am and met with the personnel listed in the table on page 1 of this report. I presented my credentials to Mr. Wortman and Mr. Segura and informed them that this was an EPA inspection to determine compliance with the facility's National Pollutant Discharge Elimination System (NPDES) permit and the Clean Water Act (CWA). The inspection was conducted under the authority of the NPDES permit program, in accordance with the Federal CWA. This report is based on information supplied by KAFB GWTS representatives (the permittee), observations made by the EPA inspector, and records and reports maintained by the permittee and the EPA.

FACILITY DESCRIPTION

The KAFB GWTS is classified as a minor industrial discharger under the CWA, Section 402, of the NPDES permit program and is authorized to discharge up to 800 gallons per minute, based on design flow. The permittee is authorized to discharge treated water from Outfall 001 to the Tijeras Arroyo, an unclassified intermittent water in waterbody segment 20.6.4.098 (NMAC, State of New Mexico Standards for Interstate and Intrastate Surface Waters). This segment includes the designated uses of livestock watering, wildlife habitat, marginal warmwater aquatic life and primary contact.

KAFB GWTS is a ground water treatment plant which was built to address a dissolved phase ethylene dibromide (EDB) plume. The plume was caused by a jet fuel leak from the Bulk Fuels Facility at KAFB, where underground piping had been leaking for decades before the free product daylighted at the ground surface and the leak was discovered. Four extraction wells are located within the Albuquerque City limits, and the contaminated water extracted from these wells is piped to the KAFB GWTS. The GWTS plant consists of two treatment trains which include a particulate filter, an equalization tank, a catalyzed sand filter, two 20,000-pound granular activated carbon vessels that operate in series, a second equalization tank, and a particulate filter. The facility is controlled by a Supervisory Control and Data Acquisition (SCADA) system. The plant is designed to treat up to 800 gallons per minute of non-hazardous, contaminated groundwater.

The facility is using treated effluent for golf course irrigation during warmer months or returning the water to the regional aquifer under a Class V Underground Injection Control permit. The facility currently does not discharge to Tijeras Arroyo under their NPDES permit, but has obtained the permit as a backup option in the event of the infrastructure failures at the golf course and/or at the injection wells.

The following Facility details were confirmed during the inspection:

Are there currently any plans for renovation or additional equipment to allow for increased wastewater flow?	There are plans to optimize the extraction well volumes and reduce the overall flow by extracting only contaminated water. Currently the system is extracting too much clean water in addition to the contaminated water.
What percentage of annual flow can be attributed to inflow/infiltration?	Zero – The GWTS pipes are double-wall HDPE with pressure gauges measuring the influent and effluent balance. Any leakage would be detected and an alarm on the SCADA system would notify operators.
What is the operation schedule, and is staffing sufficient for proper operation?	Monday through Friday, 7am to 5pm, with someone on-call evenings and weekends. Yes, staffing is sufficient, there are five total operators. SCADA can be operated remotely from phones and multiple operators get every alarm notification.
How is backup electrical power provided to the plant? And what portion of the plant does the backup power run?	Backup power is solar, but does not power the plant, it powers the alarm notification to the operators that the power is out. Leak detection inside building is powered by solar.
Does water continue to discharge to the outfall in the case of a power outage?	No; power failure will shut down both extraction wells and treatment process, so all water will stop flowing.
What spare parts are kept in case of failures?	Backup pumps and motors for all major components, piping, transducers, and an extra computer.
What type of primary flow meters? Who calibrates them and how often?	All flow meters are closed-pipe mag-meters with display. INC Solutions calibrates all electronics in the plant. There is no dedicated flow meter that would measure flow to the arroyo at this time. If water discharged to the arroyo, the flow would be calculated by subtracting the flow to injection wells and golf course pond from the total flow. SCADA does backup flow calculations.
What laboratory are analytical samples sent to, and is the permittee prepared for all required sampling events?	Samples are sent to Eurofins Scientific, in Lancaster, PA. Samples have not been collected for the NPDES permit due to no discharge. Compliance samples are collected regularly for groundwater and Resource Conservation and Recovery Act (RCRA) permits, and sample kits are available on-site, should an NPDES discharge occur.

Sludge management?	This facility does not produce sludge. The sand filters, which remove biofouling and reduce manganese and iron, have never been vacuumed out. The granulated activated carbon (GAC), which does the EDB removal, is coconut husks and it gets removed and replaced by TIGG (company owned by Newterra Group) and "reactivated" by Carbon Activated Corporation at their facility in California. According to Carbon Activated Corporation: "The reactivation process involves segregated thermal treatment of spent activated carbon in rotary kilns at temperatures up to 1450 degrees Fahrenheit. Desorbed organic contaminants are combusted in high temperature excess air afterburners at measured destruction and removal efficiencies of at least 99.99 percent. Exit gases from the afterburners are passed through a scrubbing system for particulate removal and acid gas neutralization before being released to the atmosphere."
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Section II – OBSERVATIONS

During the inspection, the following observations were made:

The KAFB golf course reuse storage pond capacity is 4 or 5 million gallons. A second injection well (IW-2) was installed in October 2020. On the date of this inspection, all effluent flow was going to IW-2 because the golf course pond was undergoing leak detection. Leak detection is done by not pumping to or from the pond, and calculating water drop versus evaporation and rainfall. Pond maximum level is 4.5 feet.

In October 2020, a water spill occurred at the GWTS due to a failure to shut down two of the extraction wells during a power outage. The water flowed out of the building, down several roads and into a storm drain that discharged to a nearby ditch and along a drainage pathway on a nearby road. The released water terminated approximately 2,140 feet away from the GWTS. Based on the approximate flow rate and the estimated time period that the release could have occurred, it is estimated that between 38,000 and 83,000 total gallons of water could potentially have been released. Water that is collected by the floor drains in the building gets pumped back to the influent intake regularly. This water normally includes backwash from filters, sample purge water, cleaning water, etc. Spilled water within the building and the external sump was processed through the treatment system in manual mode. Analytical samples were collected from the spilled water and the contacted soil, and it was determined that all potential contaminants were below threshold levels. Notification of this spill was made to the NMED in compliance with the Resource Conservation and Recovery Act Permit, but notification was not sent to EPA.

A tour was conducted of the following KAFB facility locations (listed below in flow-direction order, not the order visited during the inspection), and the associated observations were made:

- ❖ Extraction well KAFB-106-239
 - This well is not located on KAFB property, it is within Albuquerque city limits, near houses. The vault is locked to prevent tampering, and the SCADA sends out alarms when the vault is opened.
- ❖ GWTS building
 - System appears clean and well-maintained.
- ❖ Injection well KAFB-106-IN-2
 - Water flows through piping at around 73 degrees Fahrenheit; heat trace tape is used to ensure water does not freeze during low-flow conditions.
- ❖ Control valve to Outfall 001
 - This valve controls whether the water is discharged at the outfall or continues flowing to the golf course pond
 - There are bollards around the concrete valve pad, but no lock or fence around the valve. The valve requires a special key to turn. There is no signage indicating who to contact in case of an emergency.
- ❖ NPDES Outfall 001
 - No discharge or evidence of prior discharge at outfall. No signage indicating that discharge would be non-potable.
- ❖ Golf course reuse storage pond and water traps
 - The other ponds at the golf course are water traps for playing golf – water can be pumped to them but not from them. High level overflow at each water trap pond goes back to the reuse storage pond. There is no flow meter at the reuse pond, just at the plant and at the injection wells; it is not clear if there is a flow meter present that would measure individual flow to the golf course pond and to Outfall 001, if discharge at the outfall were to occur.

After leaving the facility on 01/26/2023, additional facility documents were reviewed including, but not limited to: signed copies of Discharge Monitoring Reports, process water quality sampling results, the spill report from October 2020, flow meter verifications, GAC documentation, and process diagrams.

Section III – AREAS OF CONCERN

Requirement 1

NPDES Permit NM0031216, Part III: Standard Conditions B.3. Proper Operation and Maintenance a. *The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by permittee as efficiently as possible and in a manner which will minimize upsets and discharges of excessive pollutants and will achieve compliance with the conditions of this permit.*

Concern 1

On the day of the inspection, signage was not present at the control valve to the outfall, or at Outfall 001 to indicate who is responsible for the valve in the case of an accidental release, or to warn pedestrians of the non-potable nature of the potential discharge water. After the inspection, facility personnel confirmed that signage has been added at both locations.

Requirement 2

NPDES Permit NM0031216, Part III: Standard Conditions D.7.a. *The permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the permittee becomes aware of the circumstances. A written submission shall be provided within 5 days of the time the permittee becomes aware of the circumstances.*

Concern 2

It is noted that the spill on October 5, 2020 did not "endanger health or the environment" based on the sampling results from samples collected on October 6, 2020. However, as a best management practice, it is recommended that any spill that exits the facility building, and is therefore not captured by the sump and subsequently sent back to the treatment system, be reported within the 24-hour reporting window. If the sample results received on October 15, 2020, had come back elevated, the 24-hour reporting window would have already been exceeded.

Section IV – FOLLOW UP

The following documentation was received by EPA after exiting the Facility on 01/26/2027:

- Appendix F -2 Injection Well As-Builts.pdf
- Final 06OCT2020 GWTS Water Release Report.pdf
- Flow Meter Verification Forms.pdf
- Injection Well Construction Diagram.pdf
- posters.pptx
- Reactivation Certification - Kirtland AFB.pdf
- An email was received from Mr. Wortman on 02/22/2023 with photographic evidence of signage that had been added at the outfall control valve and at the outfall.

Section V – LIST OF APPENDICES

Appendix 1 – Photo Log – 6 photos taken 01/26/2023

Appendix 2 – Facility Maps as provided by KAFB personnel

Appendix 1

Photograph Log



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Photograph Log

Photo No. 1

Location: Kirtland Air Force Base (KAFB), Bulk Fuels Facility Groundwater Treatment System (GWTS)		
City: Albuquerque	County: Bernalillo	State: New Mexico



Photo File Name: DSCN1568.JPG

Date of Photo: 1/26/2023

Time of Photo: 11:03 AM

Photographer: Amy Andrews

Description: View inside the GWTS building, showing the white Granular Activated Carbon (GAC) tanks.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Photograph Log

Photo No. 2

Location: Kirtland Air Force Base (KAFB), Bulk Fuels Facility Groundwater Treatment System (GWTS)		
City: Albuquerque	County: Bernalillo	State: New Mexico



Photo File Name: DSCN1569.JPG

Date of Photo: 1/26/2023

Time of Photo: 11:03 AM

Photographer: Amy Andrews

Description: View inside the GWTS building, showing the blue sand filter tanks.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Photograph Log

Photo No. 3

Location: Kirtland Air Force Base (KAFB), Bulk Fuels Facility Groundwater Treatment System (GWTS)		
City: Albuquerque	County: Bernalillo	State: New Mexico



Photo File Name: DSCN1566.JPG

Date of Photo: 1/26/2023

Time of Photo: 10:46 AM

Photographer: Amy Andrews

Description: View inside the GWTS building, showing the sample ports and floor drain that feeds back to the influent intake.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Photograph Log

Photo No. 4

Location: Kirtland Air Force Base (KAFB), Bulk Fuels Facility Groundwater Treatment System (GWTS)		
City: Albuquerque	County: Bernalillo	State: New Mexico



Photo File Name: DSCN1578.JPG

Date of Photo: 1/26/2023

Time of Photo: 11:35 AM

Photographer: Amy Andrews

Description: View of the concrete pad and bollards around the outfall control valve.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Photograph Log

Photo No. 5

Location: Kirtland Air Force Base (KAFB), Bulk Fuels Facility Groundwater Treatment System (GWTS)		
City: Albuquerque	County: Bernalillo	State: New Mexico



Photo File Name: DSCN1581.JPG

Date of Photo: 1/26/2023

Time of Photo: 11:42 AM

Photographer: Amy Andrews

Description: View of Outfall 001.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Photograph Log

Photo No. 6

Location: Kirtland Air Force Base (KAFB), Bulk Fuels Facility Groundwater Treatment System (GWTS)		
City: Albuquerque	County: Bernalillo	State: New Mexico



Photo File Name: DSCN1585.JPG

Date of Photo: 1/26/2023

Time of Photo: 11:53 AM

Photographer: Amy Andrews

Description: View of the golf course reuse storage pond.

Appendix 2

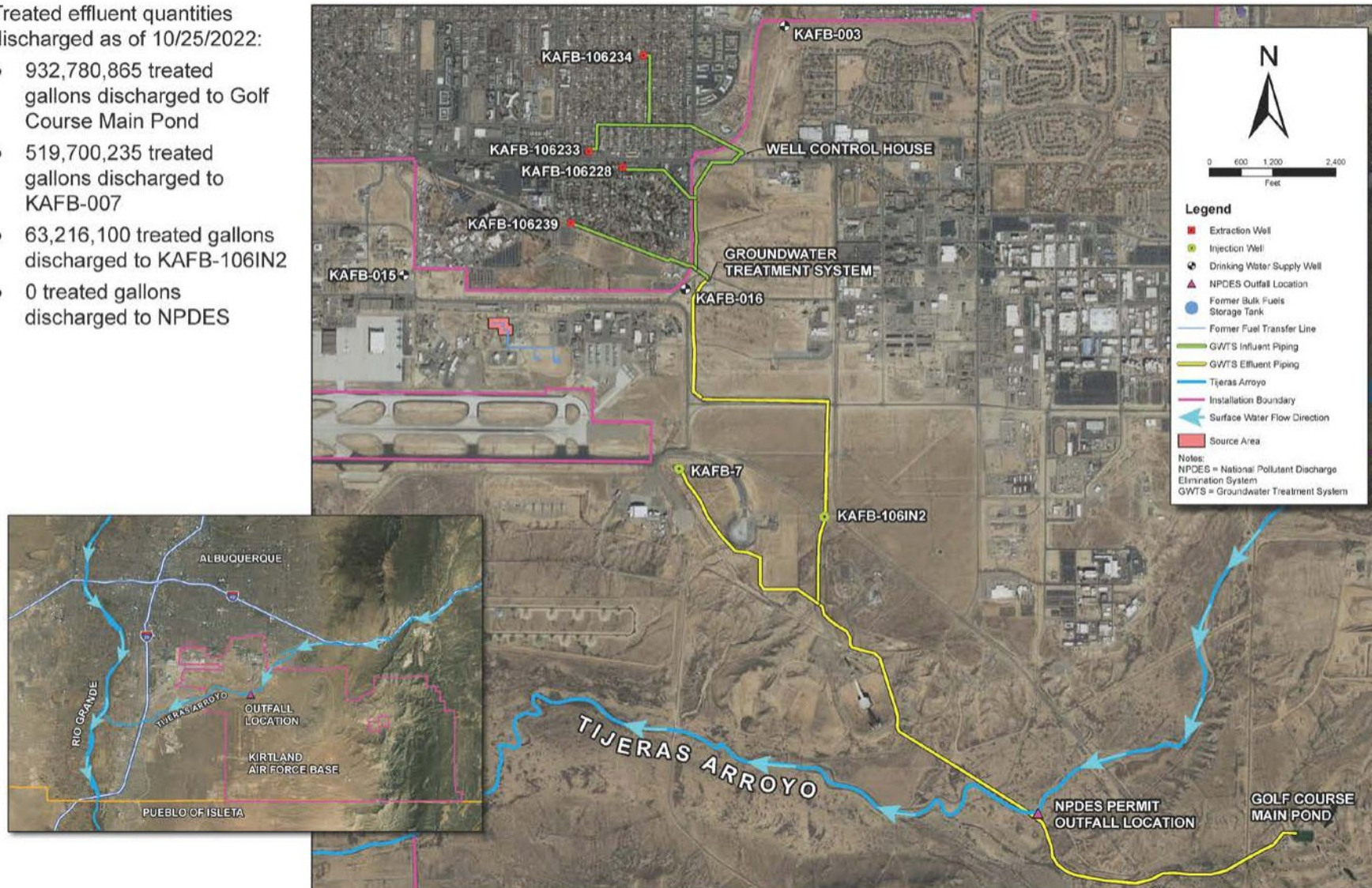
Facility Maps as provided by KAFB personnel

Treated Effluent Disposition Locations



Treated effluent quantities discharged as of 10/25/2022:

- 932,780,865 treated gallons discharged to Golf Course Main Pond
- 519,700,235 treated gallons discharged to KAFB-007
- 63,216,100 treated gallons discharged to KAFB-106IN2
- 0 treated gallons discharged to NPDES



EDB Plume Footprint (over time)



Comparison of Dissolved-Phase EDB Collapse in the Interim Measure Operational Area Between Q2 2015 and Q2 2022

