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I-40 Exit 39
Jamestown, NM 87347

505 722 3833
andeavor.com



April 30, 2018

Mr. John Kieling
Hazardous Waste Bureau Chief
New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505-6313



**RE: SECOND DISAPPROVAL
SANITARY LAGOON INVESTIGATION
REVISED INTERIM MEASURES REPORT HYDROCARBON SEEP AREA
WESTERN REFINING SOUTHWEST INC., GALLUP REFINERY
EPA ID # NMD000333211
HWB-WRG-15-002**

Dear Mr. Kieling:

On February 2, 2018, Western Refining Southwest Inc., Gallup Refinery (Permittee) submitted a *Sanitary Lagoon Investigation* (Investigation) in response to an October 13, 2017 email inquiry from the Energy, Minerals, and Natural Resources Department (EMNRD) Oil Conservation Division (OCD) regarding its review of the *Permittee's Revised Interim Measures Report Hydrocarbon Seep Area* and discussion of a sanitary lagoon. Please note that Gallup Refinery received Subsequent to such submittal the Permittee received comments from OCD and New Mexico Environment Department Hazardous Waste Bureau (NMED). Gallup Refinery hereby submits this letter in response to comments provided by OCD and NMED. Please note that

Comment 1

In response to OCD's October 13, 2017 Comment 4 regarding the chemicals of concern in the discharge, the Permittee states, "[l]ow concentrations of DRO and GRO and some VOCs/SVOCs were detected in the discharge, which are believed to be the result of impacted groundwater in the area entering the pipeline. These chemicals would be unlikely to be present in the flows from restrooms and showering areas." Please provide information regarding the depth of the pipeline below the ground surface. To support the Permittee's hypothesis, the pipeline would have to be at a depth below the water table. Please also provide information regarding the depth to water along where the sewer pipeline is located.

Response: Permittee is working to determine the depth of the pipeline below grade, but would like to note that it is only exposed over a short distance south of the lagoon. The boring log for MKTF-18 shows fill in the upper 10 feet with saturation and hydrocarbon impacts. MKTF 18 is near the sewer line that runs from the north side of the warehouse to the lagoon and this clearly shows the line running through an area is known shallow impacts. Whether the contaminants enter the line in this area is unknown.

Comment 2

In the second paragraph of the first page, the Permittee states that, "[b]ased on sewer maps reviewed, it appears that the lab, change house, warehouse, and potentially the truck rack drivers lounge have sanitary sewer lines that discharge to the sanitary lagoon." Discharge water samples must be collected for BOD, COD, total coliform and e. coli bacteria analyses. Groundwater samples must be collected from monitoring wells MKTF 29, MKTF-24, MKTF-25, MKTF-26, MKTF-31, MKTF-40, OAPIS-1 and other monitoring wells downgradient from the sewage lagoon and analyzed for the same constituents. Please provide the analytical data for the additional sampling in a response letter.

Response: As directed by NMED in the March 15, 2018 Response to Comments Permittee is to provide a work plan before conducting the groundwater sampling, thus the analytical data will be in a subsequent response later.

Comment 3

The Permittee conducted dye tracer tests to determine where the sanitary lagoon effluent was coming from. The Permittee states in the second bullet regarding the dye testing that, “[t]he lack of fluorescent color in the sanitary lagoon is considered confirmation that the lab chemical sink does not discharge to the lagoon.” The appearance of dye in the sanitary lagoon depends on the flow rate from the origination of the discharge. For example, high efficiency toilets require 1.3 gallons of water per flush whereas the volume of water drained from the laboratory sink is presumably much less. The flowrate from the restrooms may be significantly higher than the flow rate from the laboratory sinks. Please provide additional information regarding the dye testing procedures. Additionally, a sufficient volume of water must have been flushed after the dye was released from the sink for the dye to reach a discharge point. Therefore, please discuss the volume of water used to flush the dye through the laboratory sinks. If testing was conducted without consideration of the volume of water used, then please repeat the testing from laboratory sinks with a known volume of water to see if the dye can be traced to either the sanitary lagoon or STP-1. This is necessary as the concentrations of DRO, GRO, VOCs, and SVOCs detected at the outfall would indicate that the laboratory sink is connected to the sanitary lagoon or if the discharge pipe is connected to another source (e.g., when the Old API Separator (OAPIS) was still in use, the Permittee could not determine at least one source of discharge to the OAPIS) rather than the hypothesis of contaminated groundwater entering the pipe through the holes in the pipe. See Comment 1.

Response: Permittee is not aware of specific known volumes of water that were used during the dye test. Though Permittee proposes to eliminate the sanitary discharge, dye tests can be repeated to provide such information if perceived relevant.

Comment 4

On page 2, third paragraph, regarding the presence of TPH, VOCs, and SVOCs in the analytical results for the effluent sample, the Permittee states,

“The chemicals detected are consistent with those detected in groundwater monitoring wells closest to the sanitary lagoon and along the discharge pipeline path (but at lower concentrations than those typically detected in the groundwater). This, coupled with the fact that multiple holes were observed in the pipeline when it was uncovered in 2013 for an unrelated project, indicates that there may be impacted groundwater entering the effluent pipe through the holes. The presence of low concentrations of Methyl tert-butyl ether (MTBE), which has not been used at the refinery for several years, indicates that the chemicals detected are coming from a historic source and not from the current sanitary discharge.”

It is unlikely that groundwater contaminants could enter and flow through holes in the sewer pipeline (which should have been remedied after discovery of the holes in 2013). Please see Comments 1 and 3. However, the presence of MTBE (not used at the facility since 2006), TPH, and solvents in the discharge necessitates further investigation of potential source(s). For example, solvents may have entered the sanitary sewer through the laboratory or maintenance/warehouse areas. OCD is requiring the Permittee to conduct a Mechanical Integrity Test (MIT) on the sewer lines leading to the sewage lagoon, and NMED concurs.

Response: Though Permittee proposes to eliminate the sanitary discharge, a plan for MIT on the sewer lines leading to the sewage lagoon can be discussed if perceived relevant.

Comment 5

On the first page, second paragraph, the Permittee states, “[b]ased on sewer maps reviewed, it appears that the lab, change house, warehouse, and potentially the truck rack drivers lounge have sanitary sewer lines that discharge to the sanitary lagoon,” and “[y]es, sanitary effluent from the lab, change house, warehouse, and truck rack drivers lounge discharges to the area referred to as the sanitary lagoon.” In the dye test discussion dye testing for the warehouse was not mentioned. Please provide the information regarding dye testing for the warehouse.

Response: Attachment A and Attachment B are drawings that were evaluated for identification of possible sources of sanitary discharges to the sewage lagoon. A dye test at the warehouse bathroom was conducted on April 27, 2018.

Comment 6

On page two, paragraph 2, the Permittee states, "[t]he water discharging into the pond was consistently clear, with no color or solid matter, and a slight sanitary odor." Please provide information regarding how the sanitary wastewater from toilets is treated and how the facility prevents exposure to personnel.

Response: Sanitary wastewaters are sent to the Sanitary Treatment Pond-1 (STP-1) which uses aeration for treatment. Permittee has addressed personnel exposures through implementation of occupational exposure assessments and necessary personal protective measures in accordance with Occupational Safety and Health Administration Regulations.

Comment 7

On page 2, second paragraph, the Permittee states, "[t]he flowrate into the sanitary lagoon varies from less than one gallon per minute to approximately three gallons per minute." Please discuss the reasons for the variation in the flow rate to the lagoon (e.g., high use times for restrooms). Please also discuss whether there is a record of historic flow rates.

Response: Permittee has not regularly recorded flow volumes and therefore cannot provide any rationale behind fluctuations such volumes. As previously stated, the Permittee proposes to eliminate the sanitary discharge and proposes to evaluate the need for such information based upon relevance.

Comment 8

The Permittee must investigate how the discharge has affected the groundwater levels and groundwater flow downgradient from the sanitary lagoon. The lagoon has been in use since the late 1950s and may have affected both groundwater levels and constituents contained in groundwater. Please see Comment 2. Additionally, cessation of the sewage discharge may affect groundwater levels. The Permittee must evaluate whether groundwater monitoring wells are screened at appropriate intervals once groundwater levels cease to be influenced by the discharge.

Response: There is little doubt that the discharge to the lagoon has not affected local groundwater levels. This effect is shown on the potentiometric surface map included the Facility-Wide Groundwater Monitoring report each year. There is an obvious flattening of the gradient beneath the lagoon, which is believed to be the result of recharge from the lagoon.

It is very likely that cessation of discharge at the lagoon will affect the local gradient, but the affected area is anticipated to be very small in comparison to the larger area of the hydrocarbon seep plume. The regional gradient is not anticipated to be affected by any such change in discharge at the lagoon.

Comment 9

NMED was under the impression that most effluent, both sanitary and process-related, were discharged, historically, to the Aeration Basin or, currently, to pond STP-1. NMED was previously aware of the sewage lagoon, because in 2005, a letter dated August 31, 2005 stated that the sewage lagoon "still receives small amounts of sewage from the refinery." Notwithstanding, the Permittee did not present the flow rate or other information regarding the pond or effluent, and it was not clear whether it was raw sewage. Raw sewage is not regulated under the hazardous waste regulations. However, 20.6.2.3104 NMAC (Discharge Permit Required) of the ground and surface water protection regulations requires that, "[u]nless otherwise provided by this Part, no person shall cause or allow effluent or leachate to discharge so that it may move directly or indirectly into ground water unless he is discharging pursuant to a discharge permit issued by the Secretary." Regulations require a permit for domestic wastewater discharges of greater than 5,000 gallons per day (gpd) from septage disposal through the NMED's Groundwater Quality Bureau. Domestic wastewater discharges of less than 5,000 gpd are permitted through the NMED's Environmental Health Bureau Liquid Waste Program. NMED is not aware of a permit issued by either Bureau to the Permittee to discharge effluent to the sanitary lagoon. Even though the Permittee proposes that "Western will begin to develop plans for this project and intends to communicate the proposed plan for re-routing the sanitary discharge to you no later than March 1, 2018," the Permittee must contact the appropriate Bureau to report the discharge and obtain any required permits. Additionally, the Permittee communicated to OCD in an email dated March 2, 2018 that due a turnaround at the facility, the plan to re-route discharge will now be submitted no later than May 31, 2018.

Response: The plan is being prepared for submission no later than May 31, 2018.

Comment 10

The analytical results for the sanitary effluent identified the following constituents:

Constituent	Analytical Result	MDL	Tap water standard	EPA Max Toxicity	WQCC standard
1,1-dichloroethane (DCA)	1.1 ug/L	0.40	27.5 ug/L (c)		25 ug/L
vinyl chloride	0.81 ug/L	0.18	0.324 ug/L(c)	200 ug/L	1 ug/L
DRO	1.8 mg/L	0.36			
GRO	4.8 mg/L	0.25			
benzene	310 ug/L	1.2	4.22 ug/L(c)	500 ug/L	10 ug/L
naphthalene	33 ug/L	29	1.65 ug/L(c)		
ethylbenzene	52 ug/L	0.093	15 ug/L(c)		750 ug/L
toluene	960 ug/L	1.3	1090 ug/L (nc)		750 ug/L
Methyl tert-butyl ether (MTBE)	26 ug/L	0.24	143 ug/L(c)		
Xylenes	210 ug/L	0.32	193 ug/L (nc)		620 ug/L

The table above includes the constituent, analytical results, the laboratory's method detection limits, and comparisons to standards in Risk Assessment Guidance for Investigations and Remediation Volume I, March 2017 Table A-1 for NM Tap Water standards (both for cancer (c) and non-cancer (nc)), the EPA Maximum Concentration of Contaminants for Toxicity Characteristic, and the NM Water Quality Control Commission's standards for protection of groundwater. Several constituents exceed one or more of the standards as highlighted in the table (yellow highlight indicating the constituent was detected over a standard and orange indicating which standard). Over time, the effluent may have affected groundwater and soils in the vicinity of the sanitary lagoon. The Permittee must propose to collect soil samples from within the sanitary lagoon and along the pipe where the holes were discovered. Samples must be analyzed for TPH-DRO, TPH-GRO, VOCs, and SVOCs. At least one sample must be collected from directly below the sewage outfall. Please submit a work plan to propose such soil sampling.

Response: An Investigation Work Plan is being prepared for submission prior to May 31, 2018.

Comment 11

The Permittee's response to OCD's question regarding whether monitoring wells detect Constituents of Concern (COCs) from the discharges states, "[t]he chemicals detected in monitoring wells near the sanitary lagoon and along the pipeline path are typically at higher concentrations than those detected in the discharge." Please identify the monitoring wells and the associated COCs.

Response: The COCs of potential concern are those listed above in the table included in Comment No. 10. The monitoring wells near the sanitary lagoon and the pipeline include; MKTF-38, MKTF-18, MKTF-08, MKTF-13, MKTF-04, MKTF-14, MKTF-01, and MKTF-02 (see attached map). The chemical analyses for wells MKTF-01, -02, -04, -18, and -38 are provided in the enclosed tables. SPH is present in wells MKTF-08, -13, and -14.

Comment 12

In response to OCD's question regarding the period of time for the discharge, the Permittee states, "[t]he discharge has been occurring since at least 1957 (the date of the attached sewerage map)." The discharge was likely a continuous source of groundwater recharge, as well as a source for potential soil and groundwater contamination. The discharge to the sewage lagoon represents a routine and systematic release of hazardous constituents to the environment, which meets the definition of a solid waste management unit (SWMU). At this time NMED will not add the pond to the RCRA Permit as a SWMU.

Response: While Permittee acknowledges and appreciates NMED's decision, Permittee requests that any future consideration of the sanitary lagoon note its location to be within area identified as SWMU 12. As previously

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discussed a work plan is to be submitted by May 31, 2018 in which soil sampling will be addressed. Additionally, a work plan for SWMU 12 is required to be submitted at a later date in accordance with the RCRA Permit.

If you have any questions regarding this payment, please do not hesitate to contact me by telephone at (505) 722-0287 or by email at Jessica.L.O'Brien@andeavor.com.

Sincerely,

A handwritten signature in cursive script that reads "Jessica L. O'Brien".

Jessica L. O'Brien
Acting Environmental Supervisor
Western Refining Southwest, Inc. – Gallup Refinery

Enclosures:

cc: Kristen VanHorn, NMED HWB
Michiya Suzuki, NMED HWB
Carl Chavez, OCD

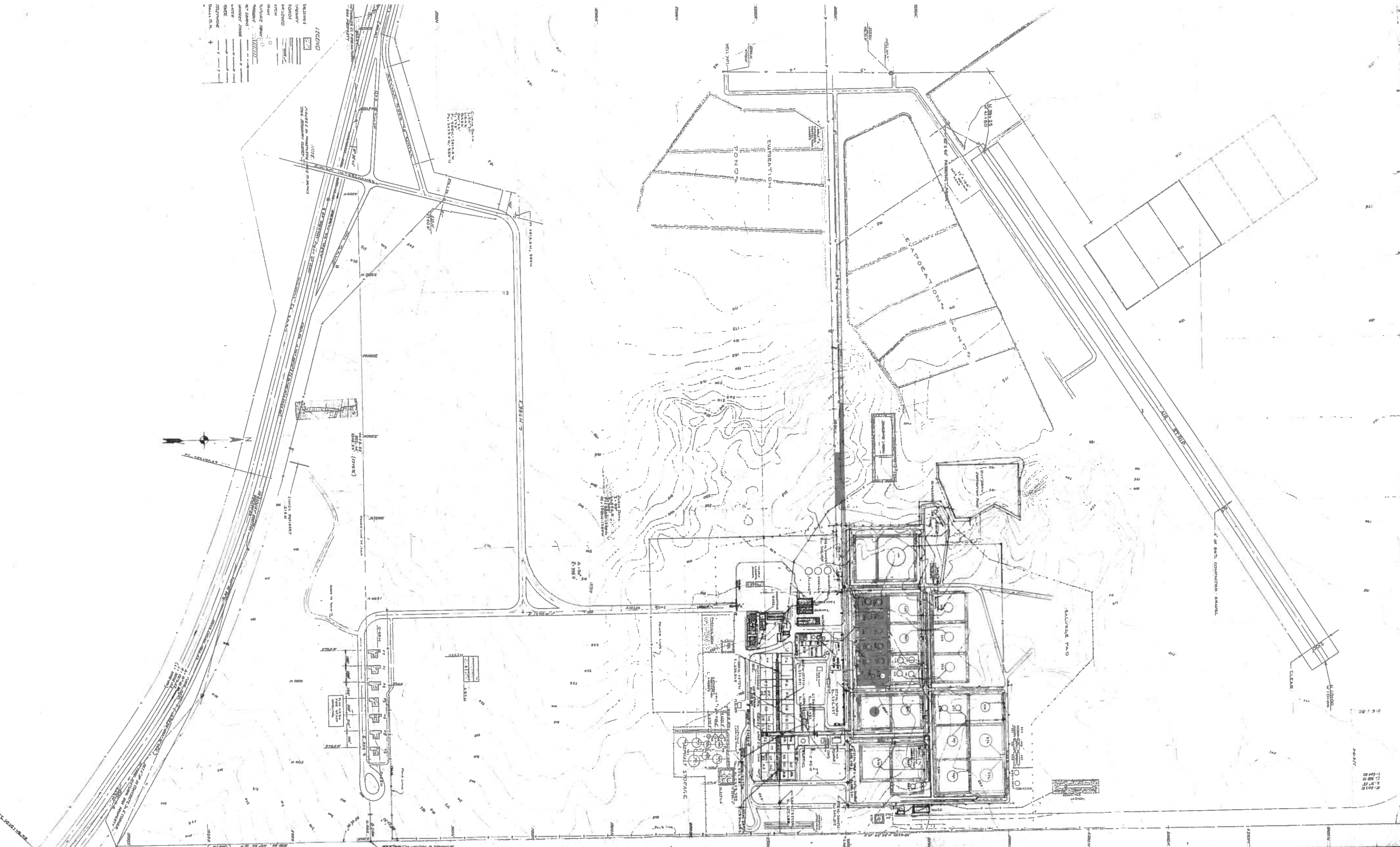
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Attachment A

1.75" = 100' (VERTICAL SCALE)
1" = 100' (HORIZONTAL SCALE)
DATE: 11/15/50
DRAWN BY: J. H. BROWN
CHECKED BY: J. H. BROWN
APPROVED BY: J. H. BROWN



LEGEND

[Symbol]	BUILDING
[Symbol]	PARKING
[Symbol]	ROAD
[Symbol]	UTILITY
[Symbol]	WATER
[Symbol]	SEWER
[Symbol]	TEL/WIRE
[Symbol]	GRAVEL
[Symbol]	ASPHALT
[Symbol]	CONCRETE

MASTER PLAN

NO.	DATE	REVISION
1	11/15/50	ISSUED

DESIGNED BY: J. H. BROWN
CHECKED BY: J. H. BROWN
APPROVED BY: J. H. BROWN

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Attachment B

