

Technical Information for Permit

Includes Technical Information for Permit and
Drawing

Please NOTE: The 2-year Service Policy noted in Technical Information for Permit will be a separate contract, NOT INCLUDED IN THIS CONTRACT, procured directly by State Parks Division at time of permitting by installer. Point of contact for that coordination will be Brad Hood, Regional Maintenance Specialist, State Park Division

**GRAYSON COUNTY
ON-SITE SEWAGE FACILITY
TECHNICAL INFORMATION FOR PERMIT**

DO NOT BEGIN CONSTRUCTION PRIOR TO APPLICATION APPROVAL

All Blanks Must Be Completed (Use N/A if Not Applicable)

PROPERTY OWNER'S NAME: EISENHOWER STATE PARK

Professional design required: Yes No If yes, is professional design attached: Yes No

I. Sewer (House Drain):

Type and size of pipe: 4' SDR-26 Slope of sewer pipe to tank: 1/8' / FT
(1/8 inch per foot minimum)

II. Treatment/Pump Tank Unit:

Septic Tank (two compartments) Septic Tank (series) Aerobic Unit
 Pretreatment Tank Pump Tank

A. Pretreatment Tank Gallons/Size: (5) each existing 2,500 gallon _____
Manufacturer : Unknown _____ Material/Shape: Concrete/Rectangular _____

B. Secondary Treatment Unit Gallons/Size: (3) each 1500 _____
Manufacturer: Pro Flo Model: 1500S

C. Pump Tank Gallons/Size: 3 (each) 2,000 gallon _____
Manufacturer: Quality Concrete Material/Shape: Concrete/Rectangular _____
Commercial timer required: Yes No

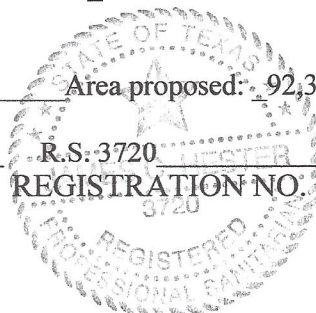
D. Septic Tank Gallons/Size: N/A Material/Shape: N/A _____
Liquid Depth (tank bottom to outlet): N/A Manufacturer: N/A _____
If Series Tanks:
Septic Tank(2) Size: N/A Material/Shape: N/A _____
Liquid Depth (tank bottom to outlet): N/A Manufacturer: N/A _____

E. OTHER (List): (2) each 2,000 gal Dosing Tanks

III. DISPOSAL SYSTEM:

Type: Surface Application Manufacturer: KRain/Hunter or Equivalent _____
Pipe Sizes/Amounts: 1" SCH 40 PVC
Area required: 88,889 sq. ft. Area proposed: 92,352 sq. ft. _____

James Water
DESIGNER'S SIGNATURE



7-20-20
DATE

System Information for Surface Application

EISENHOWER STATE PARK

Minimum Area of Application: This system is for **50 RV sites** located in the Bois D' Arc camping loop in the state park, **2 restrooms** that have 2 showers each and a separate **washer / laundry room** in the back of the restrooms with water saving devices. Records from the park were obtained for holiday weekends to show a range from 100 to 140 total campers in the Bois D' Arc Loop on a given peak day. The total flow shall be estimated to be 4,000 gallons per day which requires a minimum surface application area of 88,889 sq. ft. The **actual surface application area** to be utilized will be **92,352 sq. ft.**

Application Rate: 4,000 gpd / 92,352 sq. ft. day = .043 gal./sq. ft./day

Pretreatment Tanks: **5 existing 2,500 gallon tanks** are being used as primary treatment of the sewage coming from an existing Schedule 40 PVC pipe that runs generally behind all the rv sites and bathrooms and laundry room. This is accomplished by gravity flow and 2 existing lift stations that pump up the sewage from two locations. These pretreatment tanks should have the sludge pumped out on a yearly basis or as needed to ensure proper performance. These 5 large tanks will help reduce the BOD strength of the sewage through the process of anaerobic digestion. From these 5 tanks the sewage water will flow into an existing **1,500 gallon pump tank**. This tank has been pumping effluent into 2 or 3 old subsurface field line locations but will now push up the effluent up into the new proposed treatment unit. This tank is equipped with two large pumps that will be more than adequate to push the effluent to the intended location of the new treatment system.

Equalization Tanks: **2 -2,000 gallon equalizations tanks** back to back will precede the aerobic treatment units. The tanks shall have a 4 inch pipe running through the bottom of the tanks to connect them together. The last equalization tank shall have **2 dual alternating ½ hp 2" solid pumps** (Recommend Little Giant 10SN Series or Ashland Pump) that will time dose using an **Omron cycling timer** 500 gallons into the aerobic units 8 times a day every 3 hours. The pumps should be capable of delivering 50 gpm at 10 psi. The pumps will push the effluent thru a 2 inch pipe into a 4 inch header pipe that will slow down the effluent and split into three outlets (**a horizontal manifold**) to evenly distribute the doses to all 3 aerobic units. **3 Ball Valves** shall be placed at the end of each of the three lines before the line enters the 3 aerobic units. It is recommended that the tanks have a gravity flow line located above the high water alarm level which will allow flow to the aerobic units in case of pump failure.

Aerobic Unit - Type and Brand: **3- Pro Flo 1500S Aerobic Units** with a maximum capacity of 1500 gallons per day is proposed for this site. This system is on the current list of approved systems published by the Texas Commission on Environmental Quality. Each unit is rated to treat up to 3.75 pounds of BOD per day.

Pump Chamber and Reserve Volume: **3- 2,000 gallon pump tanks** with an alarm wired on a circuit that is separate from the pumps. These tanks should be connected together through a pipe on the bottom to tie all 3 tanks together. The reserve volume must be equivalent to the one third of a days flow after the alarm is activated. The **2 dual alternating pumps** will be located in one of the pump tanks and be capable of delivering 35 gpm at 40 psi to 6 sprinkler heads. A

duplex timer shall alternately operate the pumps to spray. A **sampling port and check valve** are to be located in the pump where the pumps are located.

Sprinkler Heads - Type and Brand: 1" SCH 40 PVC pipe is to be run to 24 sprinkler heads (recommend K-Rain/Pro Plus Heads) and will be installed with low angle nozzles and maximum inlet pressure of 40 psi. The sprinkler heads will be arranged in 4 zones by a K-Rain Series 6000 Indexing Valve with 35 foot radius' as shown on the plans. Trees will have to be cut down to accommodate this spray area. All large tree trunks shall be at least 10 feet away from all sprinkler heads so minimum spray area is reduced. Valves shall be placed in the sprinkler heads to avoid downhill run off and ponding of treated effluent after the pump has gone off and the heads go down. This will be needed since some of the supply lines and heads will be installed downhill of the pump.

Method of Disinfection for Effluent: Chlorine will be added following the Aerobic Unit, with an approved in-line chlorine treatment device. Calcium hypochlorite tablets must be stored in the in the device on a continual basis to disinfect any pathogens that were not eliminated during treatment.

Set Back Distances: All setback distances have been observed.

Landscape plan: Trees will have to be cut down to accommodate the spray application area. All large tree trunks shall be at least 10 feet away from all sprinkler heads so minimum spray area is reduced. The disposal area shall be sodded or seeded with Bermuda, San Augustine, Centipede, or other suitable grasses. At minimum, the areas shall be seeded before system start up.

Service Agreement: A two year service policy must be provided by the installer. This policy must be renewed by the owner at the end of two (2) years and **be maintained on a continual basis** on this commercial unit. The policy must meet the minimum requirements of the TCEQ.

Affidavit to the Public: An "Affidavit to the Public" with a legal description of the property shall be filed at the County Courthouse.

ESTIMATED BOD LOADING: The estimated BOD Loading is calculated as following:

$$\frac{4,000 \text{ gpd} \times 8.34 \text{ lbs/gal.} \times 400 \text{ mg/L BOD}}{1,000,000} = 13.3 \text{ lbs. BOD per day.}$$

After primary treatment of the 5 pretreatment tanks the BOD will be reduced to a total 7.98 lbs of BOD per day using a 40% reduction. The Pro Flo 1500S ATU is rated to handle 3.75 lbs. of BOD per day, therefore this existing system should be adequate to treat the organic load that will come into it.

Treatment Capacity: 3 – 1,500 gallon ATU's x 3.75 lbs/BOD/day = 11.25 lbs of BOD per day.

System Limitations: Due to the numerous conditions which must be controlled by the operator of this system the following guidelines shall be read and understood by the owner.

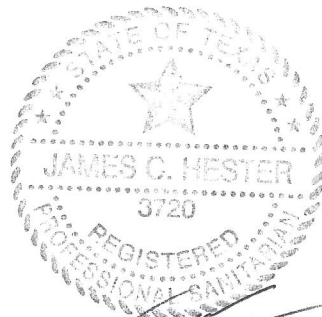
Facility Owners Responsibility: A properly designed on-site sewage facility (OSSF), properly constructed in suitable soil, can malfunction if the owner operates the facility in an unsatisfactory manner or fails to maintain the system. The proper performance of an OSSF cannot be guaranteed even though all provisions of the "Chapter 285 On-Site Sewage Facilities" have been met. OSSF's, although approved as meeting minimum standards, must be upgraded by the owner, at the owners expense, if the owner's operation of the facility results in objectional odors, if unsanitary conditions are created, if pollution or nuisance conditions are threatened or occur, or if the facility when used does not comply with federal regulations.

Owner's Responsibility: As owner and operator of waste water treatment system, the following instructions and conditions should be adhered to:

- 1) The 4,000 gallon per day rating of the proposed treatment system is based on Table III of the Chpt. 285 On-Site Regulations for manufacturing facilities. Excess water use on a continual basis can exceed this systems capacity. Increasing the number of RV sites or other means of generating a larger volume of water must be avoided and a new design proposal provided.
- 2) Surges in flow during peak use hours can cause an imbalance in the system. Such imbalances could result in release of untreated water and odors. It will be the owner's responsibility to monitor and manage the water use or upgrade the system to ensure that surges or increased water use do not result in poor quality discharges or odor. **The three aerobic units must be fed a continuous diet of food (organic matter) and oxygen to function properly.** The microbes that digest the food inside the aerobic units will not maintain a high population and die off if food and oxygen are not provided on a consistent basis. **Therefore, it is an absolute necessity to ensure all aerators and equalization pumps are working on a daily basis to help avoid odorous discharges. Establishing a weekly/monthly maintenance schedule to inspect all items of the treatment unit is imperative to achieving a satisfactory performance of this treatment system. Troubleshooting of the system should be done by a qualified individual licensed with TCEQ such as a maintenance provider.**
- 3) **The installer and or maintenance provider licensed with TCEQ shall give the owner of this system an operational manual, explain in detail how this system works, provide a continual maintenance agreement, inspect the system once every four months at a minimum. After each inspection the provider shall report his findings by submitting an inspection report to the owner and the permitting**

authority.

- 4) Contaminants in waste water can adversely impact the system resulting in odorous discharges. **Grease, chemical cleaners, and food washed down the drains should be minimized.** It will be the owner's responsibility to manage the property to ensure biological or chemical loading do not result in poor quality discharges or odors.
- 5) James C. Hester does not warranty the system or any components for the intended use. The installer should provide warranty information at the time of the installation.



James C. Hester
7-20-20

OSSF Soil & Site Evaluation

Page 1 (Soil & Site Evaluation)

Date Performed: 3/10/19

Property Owner: Eisenhower State Park _____

Site Location: 50 Park Road 20 Denison, TX ___ Proposed Excavation Depth: 12"

REQUIREMENTS:

At least two soil excavations must be performed on the site, at opposite ends of the proposed disposal area. Locations of soil borings or dug pits must be shown on the site drawing. For subsurface disposal, soil evaluations must be performed to a depth of at least two feet below the proposed disposal field excavation depth. For surface disposal, the surface horizon must be evaluated. Describe each soil horizon and identify any restrictive features on this form. Indicate depths where features appear.

Soil Boring Number:					
Depth (Feet)	Texture Class	Gravel Analysis (If Applicable)	Drainage (Mottles/ Water Table)	Restrictive Horizon	Observations
1 FT.	III	Some rocks	N/A	N/A	clay loam
2 FT.	III	gravel found	N/A	N/A	↓
3 FT.	III	in soil	N/A	N/A	
4 FT.	III	↓	N/A	N/A	
5 FT.	III	↓	N/A	N/A	

Soil Boring Number:					
Depth (Feet)	Texture Class	Gravel Analysis (If Applicable)	Drainage (Mottles/ Water Table)	Restrictive Horizon	Observations
1 FT.	III	Gravel, few	N/A	N/A	clay loam
2 FT.	III	Stones found	N/A	N/A	↓
3 FT.	III	In soil	N/A	N/A	
4 FT.	III	↓	N/A	N/A	
5 FT.	III	↓	N/A	N/A	

FEATURES OF SITE AREA

- | | |
|--|---|
| Presence of 100 year flood zone | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| Presence of upper water shed | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| Presence of adjacent ponds, streams, water impoundments | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| Existing or proposed water well in nearby area (within 150 feet) | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| Ground Slope | 5-9 ___ % |

I certify that the findings of this report are based on my field observations and are accurate to the best of my ability.

 JAMES HESTER
 (Signature of person performing evaluation)
 Form # PA5/030204-Final

3/10/19 ___ OS 012222 ___
 (Date) Registration Number and Type

Page 2 (Soil & Site Evaluation):

Date Performed: 3/10/19 _____

Site Location: 50 Park Road 20 Denison, TX ___ Subsurface Disposal Surface Disposal

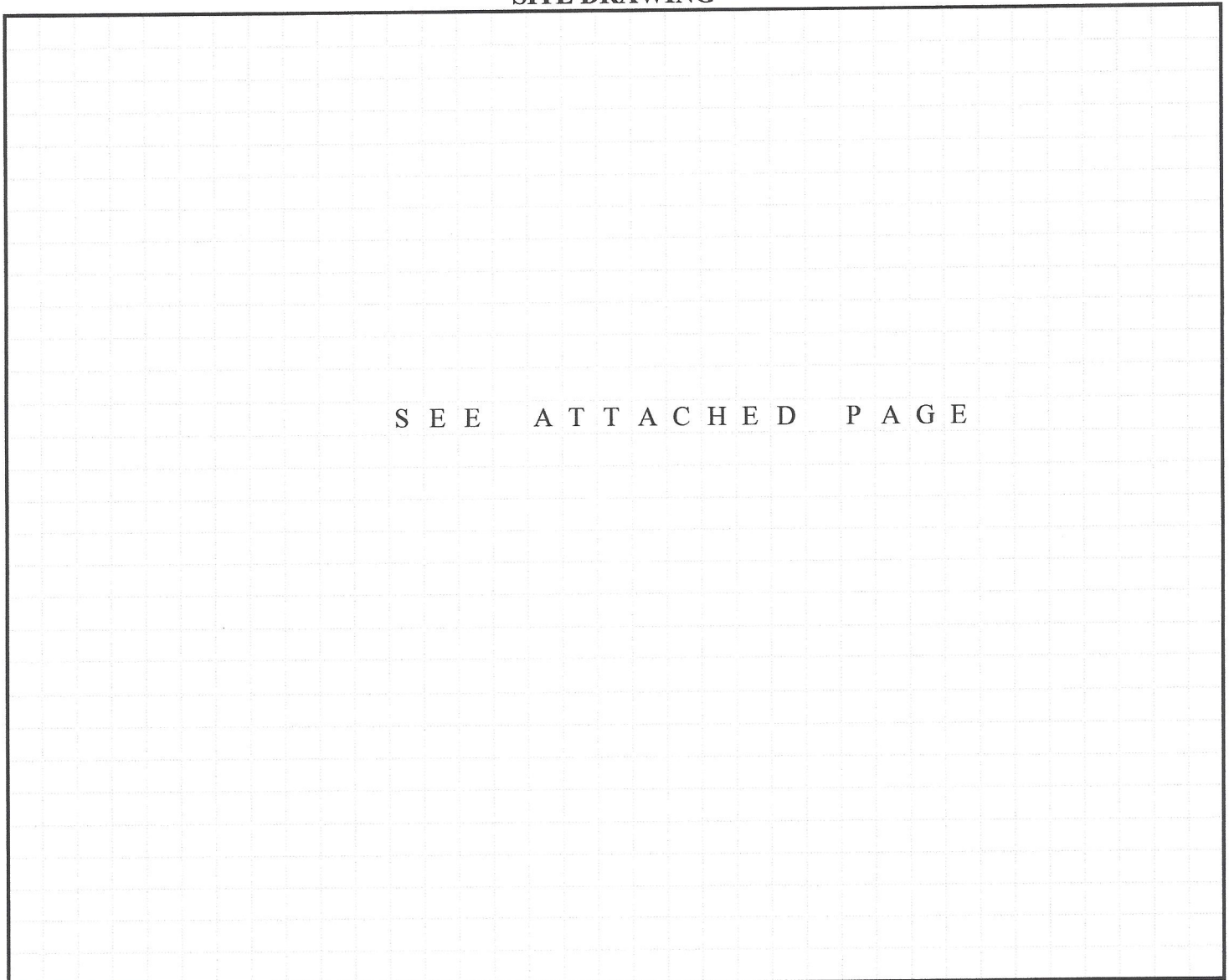
Schematic of Lot or Tract

Show:

- Compass North, adjacent streets, property lines, property dimensions, location of buildings, easements, swimming pools, water lines, and any other structures where known, all to scale.
- Location of existing or proposed water wells within 150 feet of the property.
- Indicate slope or provide contour lines from the structure to the farthest location of the proposed disposal field.
- Location of soil boring or excavation pits (show location with respect to a known reference point).
- Location of natural, constructed, or proposed drainage ways (ditches, streams, ponds, lakes, rivers, etc.), water impoundment areas, cut or fill bank, sharp slopes and breaks.

Lot Size: _____ or Acreage: _____

SITE DRAWING



EAST TEXAS ONSITE INSIGHTS

EISENHOWER STATE PARK 50 PARK ROAD 20 DENISON, TX

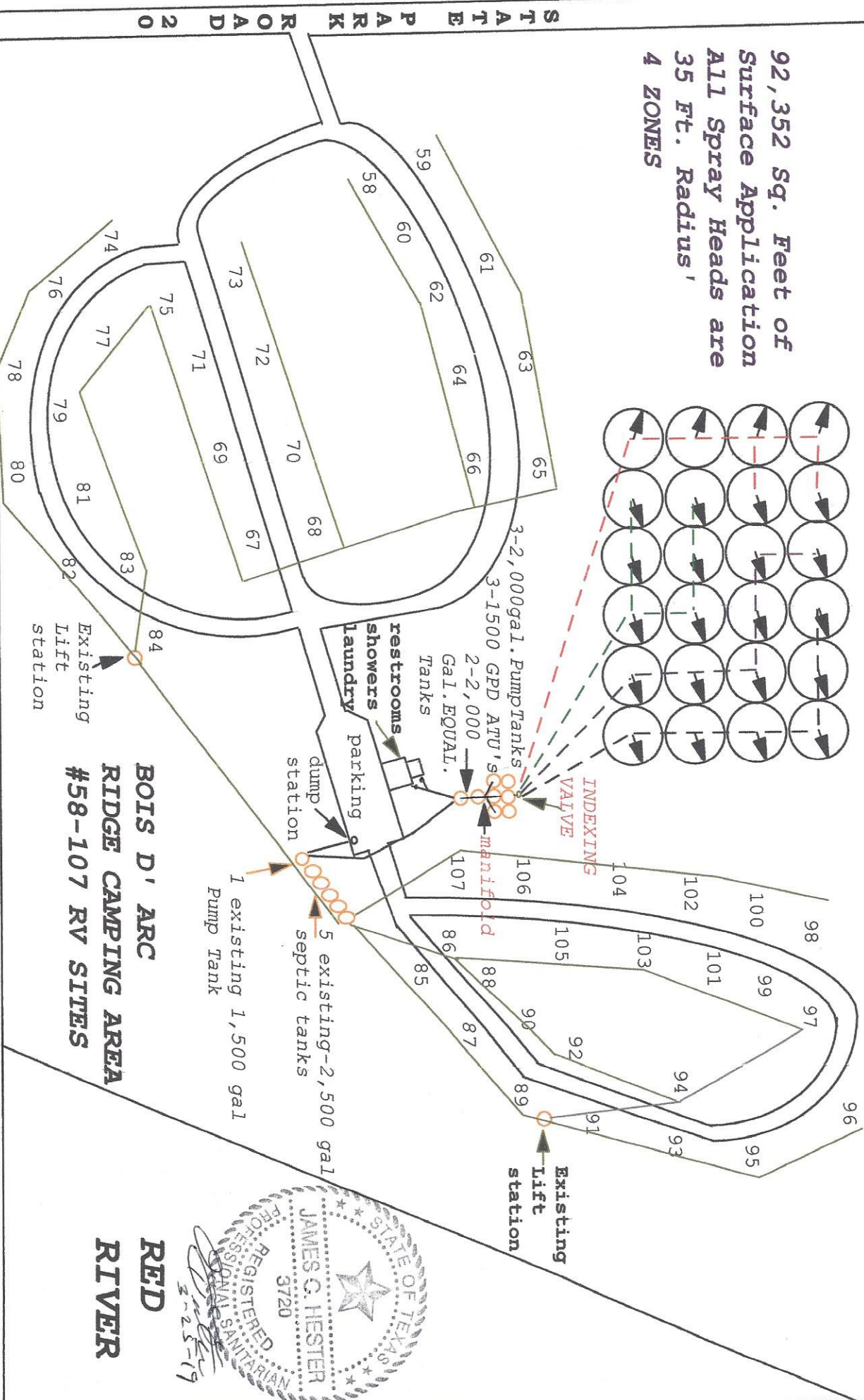
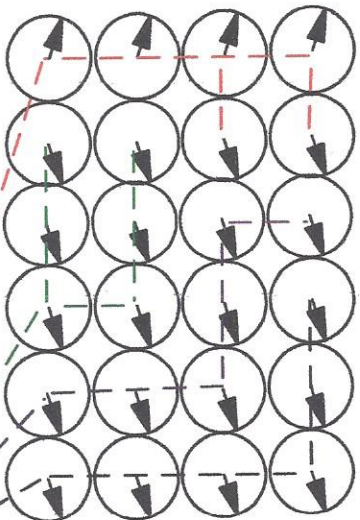
Scale: 1" = 160ft. Date: 3/25/19 Project #: RV505

RED RIVER SCH 40 PVC pipe --- Existing sewer pipe

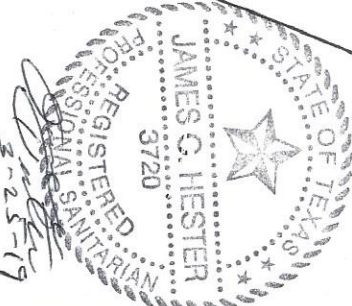
50 FT. WATER SETBACK



92,352 Sq. Feet of Surface Application
All Spray Heads are 35 Ft. Radius'
4 ZONES



STATE PARK ROAD 20



RED RIVER