

Official Draft Public Notice Version March 10, 2015

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**FACT SHEET STATEMENT OF BASIS
GOLDEN STATE OPERATING - ASHLEY VALLEY UNIT
NORTH PRODUCTION FACILITY
UPDES PERMIT NO. UT0000035
MINOR INDUSTRIAL RENEWAL PERMIT**

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DESCRIPTION OF FACILITY:

Golden State Operating (GSO) is the current permit owner of the Ashley Valley Unit North Production Facility located in Uintah County near Jensen, Utah. Golden State Operating became the permit owner effective December 1, 2014. GSO is located in California and has contracted with Summit Operating, LLC to act as a contract pumper and agent. Historically, water produced in association with oil production in the area flowed through three facilities which were permitted to discharge water. The facility known as CIMA (UT0021768) was terminated on January 28, 2013 at the request of its permit owner. A second facility known as "USA Pan American Facility" (UT0000124) was not renewed at the request of its permit owner because the facility was no longer discharging and is not expected to resume discharging. The Ashley Valley Unit North Production Facility (UT0000035) continues to discharge water produced in association with oil production in the area. The Ashley Valley Unit North Production Facility (AVU) has a Standard Industrial Classification (SIC) Code 1311 for *crude petroleum and natural gas extraction*. Under normal operations the facility continuously discharges effluent, which consists of groundwater produced in association with oil from nearby oil wells. The produced water is separated from the oil by both mechanical and gravity means in treatment vessels along with three retention ponds in series. The final effluent discharges from a culvert leaving the third retention pond, and flows through an unnamed ditch approximately ¼ of a mile to a private retention pond before continuing down an unnamed ditch approximately another ½ mile where it flows through a diversion structure, ultimately mixes with other waters and flows into the Union Irrigation Canal and Ashley Creek. During irrigation season most of the water is diverted into the Union Irrigation Canal with a small amount being diverted to Ashley Creek. During the non-irrigation season, most, if not all the water, is diverted to Ashley Creek.

A compliance evaluation inspection was completed at the AVU on May 8, 2013, and a report was sent to the previous permit owner on July 26, 2013. The results of this inspection indicated

a violation of the narrative standard, Part I.C of UPDES permit UT0000035. It appears that as a result of effluent flowing in the unnamed ditch for many years, a white mat of vegetative growth is present in areas along the unnamed ditch leading to Union Canal. It is probable that the white mat is composed of a naturally occurring sulfide consuming bacteria which, after oxidizing the sulfide to sulfur, incorporates the sulfur into its cell structure and appears white in color. The previous permit owner was given 90 days to develop a plan to significantly reduce or eliminate the growth of the white organisms. On October 2, 2013 a plan was proposed for control of the white biomass through use of an algaecide/bactericide called Earth Tec, which contains 20% copper pentahydrate. On November 19, 2013 the Division of Water Quality (DWQ) denied the use of copper pentahydrate due to the existence of water quality standards for copper, and the potential violation of those standards in Ashley Creek with the use of this pesticide. Because of the complexity of the matter, DWQ scheduled a meeting on March 5, 2014 with the previous permit owner and, as a result of that meeting; the following conditions are reflected in this permit:

1. A second discharge point will be added for the treatment system known as Outfall 002. This second discharge point may be used for irrigation, at the discretion of GSO. If a discharge occurs from Outfall 002, it must be sampled at the same frequency and for the same parameters as for Outfall 001.
2. A compliance schedule will be included in the renewal of this permit to allow GSO to develop and implement an approvable compliance plan to meet new effluent limits for TDS, undissociated hydrogen sulfide and for conformance with the narrative standard. All other permit limits shall be in effect at permit issuance.

DESCRIPTION OF DISCHARGES:

Discharge Monitoring Reports (DMR) are presently being submitted on a monthly basis by GSO and will continue to be so until the renewal permit is issued. GSO also monitors undissociated hydrogen sulfide on a monthly basis. The method and calculations for determining undissociated hydrogen sulfide will be included as an addendum to the permit. A summary of three years of data is attached to this Fact Sheet Statement of Basis (FSSOB) as Addendum I.

<u>Outfall</u>	<u>Description of Discharge Point</u>
001	18" culvert leaving the southeast side of the third retention pond located at latitude N 40.366969° and longitude -109.414831°.
002	Discharge leaving the northeast side of the third retention pond located at latitude N 40.367133° and longitude -109.414844°.

RECEIVING WATERS AND STREAM CLASSIFICATION

The discharge flows through an unnamed ditch and pond approximately $\frac{3}{4}$ to 1 mile with no mixing until it enters the Union Irrigation Canal, where it mixes with water diverted from Ashley Creek and subsequently used for nearby agricultural practices. During high runoff events and non-irrigation months, it is probable that most of the discharge would flow through the irrigation structure in Union Canal into Ashley Creek which is tributary to the Green River. The receiving waters are designated as follows:

Unnamed discharge ditch – 2B, 3E and 4

Union Irrigation Canal – 2B, 3E and 4

Ashley Creek – 2B, 3B and 4

Green River - 1C, 2A, 3B and 4

Class 1C -protected for domestic purposes with prior treatment by treatment processes as required by the Utah Division of Drinking Water.

Class 2A -protected for frequent primary contact recreation where there is a high likelihood of ingesting of water or a high degree of bodily contact with the water. Examples include, but are not limited to swimming, rafting, kayaking, diving, and water skiing.

Class 2B -protected for infrequent primary contact recreation. Also protected for secondary contact recreation where there is low likelihood of ingestion of water or a low degree of bodily contact with the water. Examples include, but are not limited to, wading, hunting, and fishing.

Class 3B -protected for warm water species of game fish and other warm water aquatic life, including the necessary aquatic organisms in their food chain.

Class 4 -protected for agricultural uses including irrigation of crops and stock watering.

Class 3E -Severely habitat limited waters. Narrative standards will be applied to protect these waters for aquatic wildlife.

SUBSTANTIVE PERMIT CHANGES

Several changes are being incorporated into the renewal permit. Discharge monitoring reports shall be submitted monthly rather than quarterly. Monitoring and effluent limits for undissociated hydrogen sulfide, and monitoring for chronic whole effluent toxicity (WET) have been added. WET testing will occur on a semi-annual basis. In the area where the unnamed ditch containing discharge from Outfall 001 enters Ashley Creek, Ashley Creek has been designated as non-attainment for TDS and included on the 303(d) list. Because Ashley Creek has been included on the 303(d) list a thirty month compliance schedule is included in the renewal permit, at the end of which the TDS limit may be lowered to 1,200 mg/L. At the end of the thirty month compliance schedule a new undissociated hydrogen sulfide limit of 0.002 mg/l will also come into effect. The undissociated hydrogen sulfide limit is intended to help in meeting the narrative standard and in addressing nuisance odors from the facility. The permit will require submission of an approvable compliance plan within 120 days of permit issuance to achieve the future limits and move towards compliance with the narrative standard. This plan must be approved by the Director. If implementation of the compliance plan does not occur as approved by the Director, GSO will be considered as non-compliant with its UPDES permit. All other permit limitations and requirements remain unchanged.

BASIS FOR EFFLUENT LIMITATIONS

In accordance with regulations promulgated in *40 Code of Federal Regulations (CFR) Part 122.44* and in *UAC R317-8-4.2*, effluent limitations are derived from technology-based effluent limitations guidelines, Utah Secondary Treatment Standards (*UAC R317-1-3.2*) or Utah Water Quality Standards (*UAC R317-2*). A waste load analysis for irrigation and non-irrigation seasons was completed and is included in Addendum II of this FSSOB. In cases where multiple limits have been developed, those that are more stringent apply. In some cases multiple limits (categorical limits and water quality standards) could be used. In cases where no limits are applicable, Best Professional Judgment (BPJ) may be used. "Best Professional Judgment" refers to a discretionary, best professional decision made by the permit writer based upon precedent, prevailing regulatory standards or other relevant information.

As previously stated, the produced water discharged from the Ashley Valley facility has been utilized for nearby agricultural practices for more than fifty years and no ill-effects to crops, livestock, or wildlife have been reported by downstream users. Based upon this information, the applicable technology based standards for oil and gas extraction are found in *40 CFR 435, Subpart E-Agriculture and Wildlife Water Use Subcategory (Subpart E)*. Subpart E includes an effluent limitation of 35 mg/L for oil & grease. This oil & grease concentration limit has not been utilized previously; instead the more stringent effluent limitation of 10 mg/L has been used.

The 10 mg/L requirement is based on the permitting authority's best professional judgment (BPJ) and EPA's Anti-Backsliding Policy, which is consistent with many other discharge permits in Utah.

The biochemical oxygen demand (BOD₅), pH, and total suspended solids (TSS) limits are based on current Utah Secondary Treatment Standards, *Utah Administrative Code (UAC) R317-1-3.2*. The effluent flow limitation is the same as in the previous permit, 1.5 million gallons per day (MGD).

The undissociated hydrogen sulfide limit is taken from the water quality standards R317-2-14, Table 2.14.2. It is anticipated that the undissociated hydrogen sulfide limit will help to reduce the narrative standard violation existing in the unnamed ditch; however it is unknown how much a 0.002 mg/l limit for undissociated hydrogen sulfide will reduce or inhibit the growth of Beggiatoa and/or Thiobrix along the unnamed ditch. However, at the end of the thirty month compliance schedule, an undissociated hydrogen sulfide limit of 0.002 mg/l will come into effect.

The TDS concentration limit for the renewal permit is based on the fact that Ashley Creek is listed on Utah's 303(d) list as impaired for TDS in that stretch where GSO's discharge enters Ashley Creek. The listing occurred in 2010. As a result, there is no assimilative capacity for TDS, and the effluent must meet the water quality standard of 1200 mg/L. This facility cannot achieve a 1200 mg/L daily maximum limit for TDS without the addition of treatment systems. This type of treatment system will take some time to design and construct, so the requirement for compliance with the 1200 mg/L TDS standard will be held in abeyance until the compliance plan is adopted, approved and implemented. Within one hundred twenty (120) days of permit issuance GSO will be required to submit to the Director for approval a detailed plan to comply with the 1200 mg/L TDS daily maximum limit. GSO will be given a thirty month time period to implement the approved compliance plan. Until implementation of the compliance plan for TDS, an interim limit of 1400 mg/L will be in effect. This limit was proposed by GSO as a number that could be met.

The table below is a replica of what will be incorporated in the permit and the permittee is expected to be able to comply with the limitations presented below.

Effluent Characteristics	Effluent Limitations a/			
	Average 30-Day	Average 7-Day	Daily Minimum	Daily Maximum
Total Flow, MGD b/	1.5	NA	NA	Report
Total Suspended Solids, mg/L	25	35	NA	NA
BOD5, mg/L	25	35	NA	NA
Total Dissolved Solids, mg/L	NA	NA	NA	1400/1200 c/
Oil & Grease, mg/L	NA	NA	NA	10
pH, Standard Units	NA	NA	6.5	9.0
Undiss. H ₂ S mg/L	NA	NA	NA	0.002 c/

NA = not applicable mg/L = milligrams per liter MGD = million gallons per day

- a/ See Part I.A for definition of terms.
- b/ Flow measurements of effluent volume shall be made in such a manner that the permittee can affirmatively demonstrate that representative values are being obtained.
- c/ Compliance with final TDS and the undissociated hydrogen sulfide effluent limits will be held in abeyance until the end of the thirty month implementation period of an approved compliance plan for both parameters*. At the conclusion of the thirty month implementation period, undissociated hydrogen sulfide shall be limited to 0.002 mg/L and TDS shall be limited to 1200 mg/L. Until the conclusion of the thirty month implementation period the limit for TDS will be 1400 mg/L. There shall be no limit for undissociated hydrogen sulfide until the conclusion of the thirty month implementation period.

*The permittee will be given thirty months after approval of a treatment plan to develop and implement a process to remove enough sulfides to impact growth of the white bacteria, to meet the future undissociated hydrogen sulfide limit and a TDS limit of 1200 mg/L. Within one hundred twenty (120) days after permit issuance the permittee is required to submit to the Director, for approval, a detailed approvable plan to comply with the narrative standard, and the future hydrogen sulfide and final TDS limitations. An approvable plan will need to contain current industrial standards for construction, like utilization of closed tankage, in order to minimize nuisance hydrogen sulfide odors with a plan that has a reasonable chance for approval. Close coordination with the Director will be required to develop a plan that is feasible. The approved plan shall contain an implementation schedule that shall provide for final implementation within thirty (30) months after approval. If implementation does not occur as per the approved plan, the permittee will be considered as non-compliant with its UPDES permit.

Discharges from GSO may eventually reach the Colorado River, which place it under the guidance of the Colorado River Basin Salinity Control Forum (CRBSCF) for total dissolved solids (TDS) mass loading limitations, which is authorized in *UAC R317-2-4* to further control salinity in the Utah portion of the Colorado River Basin. On February 28, 1977 the CRBSCF produced the "*Policy For Implementation of Colorado River Salinity Standards Through the NPDES Permit Program*" (Policy), with the most current subsequent triennial revision dated October 2011, which states that if a no-salt (i.e., no-TDS) discharge cannot be achieved, then the facility is limited to discharging one-ton per day of TDS unless a demonstration is made that it is not economically feasible and/or practicable to do so. GSO's TDS discharge exceeds the one ton per day loading limitation guideline as set by the CRBSCF; therefore a cost analysis of alternative plans was prepared in response to the 1977 Policy and was completed in 1987. The analysis indicated that a zero discharge (no-salt) or one-ton per day discharge of TDS is not economically feasible or practical considering the low production yields of the extraction system. As the State permitting authority for the CRBSCF Policy, Utah Division of Water Quality staff concurs that the exemption to the Policy is still applicable since production trends have been decreasing over time.

There shall be no discharge of sanitary wastes.

SELF-MONITORING AND REPORTING REQUIREMENTS

The following effluent self-monitoring and reporting requirements are based on BPJ. Reports shall be made on Discharge Monitoring Report (DMR) forms, or on NET DMR, and are due 28 days after the end of each month.

Self-Monitoring and Reporting Requirements			
Parameter	Frequency	Sample Type	Units
Total Flow	Continuous	Instantaneous	MGD
BOD ₅	Monthly	Grab	mg/L
Total Suspended Solids	Monthly	Grab	mg/L
Oil & Grease	Monthly	Grab	mg/L
pH	Monthly	Grab	SU
Total Dissolved Solids	Monthly	Grab	mg/L
Undissoc. H ₂ S	Monthly	Grab	mg/L
Chronic WET	Semi-annually	Grab	Pass/Fail

WASTE LOAD ANALYSIS AND ANTIDegradation REVIEW

During this UPDES renewal permit development, WLAs for non-irrigation and irrigation seasons were completed. The WLAs are appended in Appendix II. An ADR Level I review was performed and concluded that an ADR Level II review was not required. The WLAs indicate that the effluent limitations should be sufficiently protective of water quality, in order to meet State water quality standards in the receiving waters.

STORM WATER REQUIREMENTS

According to Utah Administrative Code (UAC) R317-8-3.9 this facility will not be required to maintain coverage under the UPDES multi-sector general permit for discharges associated with industrial activity, permit number UTR000000, sector I (Oil and Gas Extraction, SIC Major Group 13), because storm water will not come in contact with or be contaminated by any overburden, raw material, intermediate product, finished product, by product, or waste product located at the site of the operation.

PRETREATMENT REQUIREMENTS

This facility does not discharge process wastewater to a sanitary sewer system. Any process wastewater that the facility may discharge to the sanitary sewer, either as a direct discharge or as a hauled waste, is subject to federal, state, and local pretreatment regulations. Pursuant to section 307 of the Clean Water Act, the permittee shall comply with all applicable federal general pretreatment regulations promulgated, found in 40 CFR 403, the state's pretreatment requirements found in UAC R317-8-8, and any specific local discharge limitations developed by the Publicly Owned Treatment Works (POTW) accepting the waste.

BIOMONITORING REQUIREMENTS

As part of a nationwide effort to control toxic discharges, biomonitoring requirements are being included in permits for facilities where effluent toxicity is an existing or potential concern. In Utah, this is done in accordance with the *State of Utah Permitting and Enforcement Guidance Document for Whole Effluent Toxicity Control (Biomonitoring (2/1991))*. Authority to require effluent biomonitoring is provided in UAC R317-8, *Utah Pollutant Discharge Elimination System* and UAC R317-2, *Water Quality Standards*.

Acute WET testing was completed at this facility from 2004 to 2009. During that time period there were no acute toxicity failures. As a result it was eliminated from the permit for the last

five year cycle. Based on this information there appears to be no reasonable potential for acute toxicity. However since no testing for chronic toxicity has previously been required, inclusion of chronic WET testing is appropriate. Grab sampling will be required because of concerns for the presence of volatile and semi-volatile organic compounds. Chronic WET testing can be substituted for the testing of a number of organic compounds. WET testing can determine that even if no particular organic compound exceeds its water quality standard, that the combination of otherwise innocuous organic compounds is not exhibiting a synergistic or additive toxic effect. Monitoring will be semi-annually during irrigation and non-irrigation season in order to see if there is any effect of temperature on chronic toxicity.

The renewal permit will contain a toxicity limitation re-opener provision that allows for modification of the permit at any time in the future should testing indicate the presence of toxicity in the discharge.

PERMIT DURATION

It is recommended that this permit be effective for aduration of five (5) years.

Drafted by
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Drafted on October 6, 2014

ADDENDUM TO FACT SHEET STATEMENT OF BASIS

Addendum I: DMR data

Addendum II: Wasteload allocation for irrigation and non-irrigation seasons.

