

**FACT SHEET/STATEMENT OF BASIS
PARK CITY MUNICIPAL CORPORATION
UPDES PERMIT NO. UT0025925
JUDGE TUNNEL
NEW PERMIT
MAJOR INDUSTRIAL**

FACILITY CONTACT

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DESCRIPTION AND PAST HISTORY OF THE FACILITY

The Daly-Judge Company began construction of the Judge Tunnel (originally known as the Anchor Tunnel) in 1886 to drain groundwater from the various Ontario Mine shafts. By 1889 the tunnel reached as far back as 5,800 feet into the mountain. This water has been drained (discharged) from the mine for well over 100 years. The Ontario Mine extracted precious metals and operated up until the early 1980s. The mine tunnel is now operated by Park City Municipal Corporation and the flow is used as a culinary water source. The water drains into a collection line and flows to the Park City Municipal Corporation Empire Water Storage Tank, which is capable of holding up to one million gallons of water. If the supply exceeds the demand, or if the turbidity meter determines the water exceeds the Park City established standard of 0.5 nephelometric turbidity units as a drinking water Maximum Contaminant Level, or for other water quality reasons, the water bypasses the chlorine disinfection system and the tank and is discharged into Empire Creek. If the water is needed, and meets the drinking water standards and Park City water quality goals, the water flows into the disinfection system and into the water tank to be distributed throughout the western part of the Park City Municipal Corporation culinary water system.

Water discharged from mines, is considered a “point source” as defined by the “Clean Water Act.” The operator of the point source is required to get a National Pollutant Discharge Elimination System or “NPDES” permit, which is known in Utah as a Utah Pollutant Discharge Elimination System or “UPDES” permit. *Utah Administrative Code R317-8-3.1 (3)*. Park City submitted its application in July 2011 and updated the application in February 2012.

BACKGROUND AND PURPOSE OF THE PERMIT

A Total Maximum Daily Load or “TMDL” study on cadmium and zinc for Silver Creek was approved by EPA on August 4, 2004. The primary source areas for these pollutants are mining-related tailings within and along the stream channel. The TMDL identified specific source areas located in four stream reaches. Reach 1 (Above Park City) includes the Judge and Spiro mine tunnels and mine-related tailings. The TMDL estimated the contribution of zinc from Judge Tunnel to be less than 100 pounds/year, while the total zinc load from all reaches was calculated to be 37,146 lbs. per year. Because Judge was determined to be a minor contributor of zinc and cadmium, the TMDL did not calculate a specific load allocation for this source. Rather, the

TMDL recommended the use of best management practices (BMPs) and a recalculation of the load limits once a 75% load reduction from the legacy mine tailings was achieved. Significant reductions from the non-point sources have been achieved and remedial activities are currently ongoing in the Silver Creek watershed. The timing of the permit and compliance schedule is in alignment with the goals of the TMDL.

Silver Creek was listed in Utah's 2008 303(d) list for arsenic and total dissolved solids. A TMDL has not yet been completed for these constituents. A quantitative reasonable potential analysis conducted for these constituents in the Judge Tunnel discharge found no reasonable potential to exceed water quality standards. As such, these constituents will not be added to the permit.

Due to drinking water quality challenges, Park City is currently unable to utilize Judge Tunnel water as a drinking water source. Further, Park City is not in a position to treat Judge Tunnel immediately (as evidenced in the companion Stipulated Consent Order (SCO), Docket No. M14-01) until infrastructure can be constructed to provide conveyance and treatment at the Spiro Water Treatment Plant (SWTP) site or at the existing Quinn's Junction Water Treatment Plant (QJWTP). As such, all of the Judge Tunnel water is presently being discharged into Empire Creek. This current and historic discharge configuration is not preferred, because Empire Creek is a tributary to Silver Creek which is impaired for zinc and cadmium. There is additional concern that discharge of Judge water into Empire Creek would continue to add metals into Silver Creek and/or compromise the pending cleanup effort of lower Silver Creek

It is Park City's goal to utilize Judge Tunnel water as soon and as much as possible, although realizing this goal is dependent on many factors not within Park City's control, including future drinking water quality standards, the water chemistry in the area, and changes inside the mining tunnels.

Park City is currently constructing the Judge Tunnel Pipeline (JTPL), which will convey Judge Tunnel water to the vicinity of the existing SWTP. This pipeline is part of the long term infrastructure plan needed to treat Judge Tunnel water to comply with this UPDES permit and achieve drinking water standards and Park City's water quality goals. JTPL will be completed by November 1, 2015 as stated in the SCO. If Park City determines the existing treatment process at SWTP to be suitable to meet Park City's drinking water goals with minor modifications, and drinking water standards, water characteristics and operational conditions remain favorable, Park City may elect to treat a portion of Judge water for drinking water use at the existing SWTP at any time during the permit period. In addition, Park City will implement certain Best Management Practices (BMP) improvements at the Empire Canyon facility which would improve its solids removal capability, and thus the quality of any discharge at that facility. These two actions would serve to further the purpose of the TMDL by reducing the quantity, and improving the quality of the discharge into Empire Creek, before final compliance is achieved per the SCO.

All Judge water not utilized at SWTP would be discharged at the Empire facility, resulting in only de-minimus discharges into McLeod Creek, if at all. As such, the quality of water discharged at Spiro into the McLeod/East Canyon system would not be altered or compromised from the current situation. Full treatment and compliance with the Judge and Spiro UPDES permits will occur at a later date as stipulated by the SCO. It is anticipated that upon achievement

of full compliance at the end of the SCO compliance schedule, no discharges, beyond those allowed in the Drinking Water Facility General Permit, will be necessary or allowed at the Empire Facility. As such, significant discharges into the Silver Creek system will cease and this Judge Tunnel permit can be terminated.

DESCRIPTION OF OUTFALLS 001 AND 002

There are two discharge points from the Park City Municipal Corporation (PCMC) drinking water treatment facility at the Judge Tunnel location which historically flow intermittently and which require an individual UPDES permit. Outfall 001 is a fourteen inch diameter “gooseneck” pipe and is the main discharge point. This outfall flows when the quantity of intake water exceeds the drinking water system demand or is otherwise not needed for drinking water use, or the turbidity or a contaminant parameter of the intake water exceeds drinking water standards or Park City water quality goals. The flow from the Judge Tunnel varies from year to year due to what type of water year the area is having, among other factors. Tunnel flows may range between 700 gallons per minute to as high as 2,500 gallons per minute. During the drier months of nearly every year, the Judge Tunnel bypass flow may be the only water in the headwaters of Empire Creek. The calculated “maximum design flow” is 2,000 gallons per minute. The latitude of Outfall 001 is 40° 37’ 37.6”, and longitude 111° 30’ 10.56”.

Outfall 002 is a one inch diameter pipe that drains the gooseneck of Outfall 001. When the gooseneck discharge stops flowing, Outfall 002 drains the gooseneck to prevent damage from freezing. The maximum design flow of Outfall 002 is approximately ten gallons per minute when flowing. Therefore, since the water from Outfalls 001 and 002 is the same water, PCMC will not be required to monitor Outfall 002, nor be required to perform whole effluent toxicity tests on Outfall 002. The latitude of Outfall 002 is 40° 37’ 38.05”, and longitude 111° 30’ 9.85”.

There are three other discharge points associated with the Judge Tunnel/Empire Tank drinking water system:

1. The 1” diameter drain from the turbidity meter discharge flows about 7 gallons per hour for proper turbidity meter operation. This is the same water being sampled from Outfall 001.
2. The floor drain from the chlorination building, which discharges alongside the turbidity meter drain.
3. The 10” diameter gooseneck pipe which discharges from both the Empire Tank over flow and tank drain connections.

With the exception of the turbidity meter drain, the discharge points 2 and 3 described above seldom discharge and, along with the turbidity meter discharge, are considered to exert a minor impact to the receiving water and are considered to be part of the general maintenance and upkeep of the Park City Municipal Corporation drinking water system. These (1-3 above) are, therefore, permitted under the Utah Pollutant discharge Elimination System, General Drinking Water permit (permit number UTG-640044), which allows discharges for maintenance, emergency discharges, and cleaning, as needed. It will be required that, when Park City performs improvements to the water facility at the Empire Canyon/Judge Tunnel site, the turbidity meter drain, chlorine building floor drain and Empire storage tank overflow line will be relocated to discharge to a confined seepage pit, and not directly to Empire Canyon Creek.

The outfalls identified in this permit may need to be modified either in this permit term or in a future permit term as the terms of the SCO allow for Judge Tunnel waters to be conveyed to and addressed at other Park City Municipal treatment locations. A permit modification or permit revision as a part of a renewal will be required to accommodate this anticipated change.

DESCRIPTION OF MINE DISCHARGE WATER SOURCE

The feed water to the PCMC drinking water treatment facility is groundwater that infiltrates into, and then discharges from the Judge Tunnel portal directly upstream of the facility. It then flows through a short pipeline to the drinking water facility. However, based on a recent order (August 27, 2012) from the Division of Drinking Water, none of the Judge Tunnel water is being utilized in the Park City Drinking Water system but is being discharged through Outfalls 001 and 002 into Empire Canyon, a tributary of Silver Creek. The data submitted with the permit application shows the discharge at Outfall 001 is exceeding water quality standards for certain heavy metals.

RECEIVING WATERS AND STREAM CLASSIFICATION

The receiving streams are Empire Canyon Creek, to Silver Creek, thence the Weber River. Under *Utah Administrative Code R317-2-6*, the beneficial use designations for Empire Creek, Silver Creek and the Weber River are *1C, 2B, 3A and 4*.

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

Class 2B - Protected for secondary contact recreation such as boating, wading, or similar uses.

Class 3A - Protected for cold water species of game fish and other cold 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.

BASIS FOR EFFLUENT LIMITATIONS

During much of the year, there is little or no natural base flow in the Empire Creek, the discharge from the Judge Tunnel becomes the dominant flow in the headwaters of Empire Creek. Therefore, with little or no natural dilution potential, the stream standards found in *Utah Administrative Code R317-2-14, Numeric Criteria for Aquatic Wildlife, Numeric Criteria for Human Health Standards, and Numeric Criteria Irrigation Standards* are the basis for the effluent limitations for the following parameters: antimony, cadmium, lead, mercury, dissolved oxygen, and zinc. The limitations on pH and total suspended solids are based on current Utah Secondary Treatment Standards, *Utah Administrative Code R317-1-3.2*. The monitoring and flow requirements are based on DWQ memo: *Monitoring, Recording and Reporting Guidelines, December 1, 1991*.

Reasonable Potential Analysis

Park City has collected several water quality samples from the Judge Tunnel discharge. Samples

were analyzed for a full suite of metals (total and dissolved) hardness, total suspended solids, total dissolved solids, calcium, magnesium, turbidity, phosphorous, nitrate, radionuclides, and BOD. An average hardness of 181 mg/l was used to determine the applicable hardness-dependent water quality standards.

The 7-day 10-year low flow condition (7Q10) in the receiving water was determined to be 0 at the discharge point. As a result, no dilution/mixing zone was used in developing water quality standards for proposed effluent limits and reasonable potential analysis. End of pipe standards were applied.

A quantitative reasonable potential analysis (RP) was performed on each constituent to determine if there was reasonable potential for the discharge to exceed the applicable water quality standards. Based on the RP analysis, the following parameters exceeded the most stringent chronic water quality standard or were determined to have a reasonable potential to exceed the standard: Antimony, Cadmium, Lead, Mercury, and Zinc. As such, these parameters were included with future effluent limitations in the permit.

SPECIFIC LIMITATIONS AND MONITORING REQUIREMENTS

In accordance with the May 10, 2007 EPA Memorandum: "Compliance Schedules for Water Quality Based Effluent Limitations in NPDES Permits", which requires that effluent limits must be put into permits where the compliance schedule may extend beyond the permit term, final limits are included in this permit. **These limits will come into effect in the future, as required in the companion document, Stipulated Consent Order (SCO) Docket No.M14-01, agreed to by Park City and the DWQ, as explained below. The schedule for compliance with these limits is contained in the separate SCO to facilitate coordination of the compliance schedules for multiple UPDES permits. During the duration of this permit term and future permit terms within the compliance periods outlined in the SCO, monitoring only will be required at the frequencies shown in Table 2.**

To bring these two (Outfalls 001 and 002) discharge points into compliance with *Utah Administrative Code R317-2-14* will require substantial time and resources due to the significant challenges Park City Municipal Corporation is faced with. Along with the complex problems of the Judge Tunnel discharge, the problems are compounded due to the Spiro Tunnel mine drain discharge problems which are very similar to the Judge Tunnel Mine Drain Tunnel. Park City Municipal Corporation will likely have to change its present management of the discharge, through movement of the outfalls and/or implementation of treatment of the discharge. As this will involve complex decisions with regard to treatment, management, and other funding issues to come into compliance with the permit limits above. Park City has elected to achieve NPDES compliance for the Judge Tunnels in accordance with an "Integrated Plan" consistent with EPA's May 2012 *Integrated Municipal Stormwater and Wastewater Planning Approach Framework ("Integrated Framework")* memo. The Division of Water Quality has concurred that the use of an Integrated Framework would be appropriate to achieve compliance.

The limits included in this permit are in compliance with WQS and the TMDL, they also represent water quality targets to enable future treatment process design. These limits may be subject to revision in the future, should new information become available, or site conditions

change.

Table 1, Future Effluent Limitations for Outfalls 001 ^{a/b/} and 002 ^{a/b/}			
Parameter	Maximum Monthly Average	Daily Minimum	Daily Maximum
Total Recoverable Antimony, ug/l Based Human Health Criteria Table 2.14.6	5.6	NA	NA
Total Recoverable Cadmium, ug/l Based on 3A	.42	NA	3.9
Total Recoverable Lead, ug/l Monthly average based 3A, daily max based on 1C	6.8	NA	15.0
Total Recoverable Mercury, ug/l Monthly average based 3A, daily max based on 1C	0.012	NA	2.0
Total Recoverable Zinc, ug/l Based on 3A	198	NA	198
TSS, mg/l Based on BPJ and secondary treatment standards	25	NA	35
pH, Standard Units Based on Secondary treatment standards	NA	6.5	9.0
Dissolved Oxygen, mg/l Based on 3A	NA	5	NA
Chronic Biomonitoring	NA	NA	Pass/Fail

NA – Not Applicable.

BPJ – Best Professional Judgment: The permits writer’s best judgment based upon standard industry practices and site specific conditions.

a/ The limits in Table 1 are not in effect during this permit term, and will become effective as detailed in the Stipulated Consent Order Docket # M14-01, incorporated by reference herein.

b/ By January 1, 2016 Park City will implement best management practices (BMPs) to minimize the discharge of metals at the Empire site, to be in operation in the interim period until the SCO deadlines are achieved. Such BMPs will include measures to minimize solids in the discharge of Judge water at the site by primary screening, enhancing the settling of solids in the Empire Tank and revising the piping configuration at the site so that all water will be subject to enhanced settling before discharge. Enhanced settling will not include chemical addition. During this interim period the discharge will be sampled once each quarter that a discharge occurs for all parameters in Table 2 below.

Starting immediately and lasting throughout this permit term, Park City is required to monitor and report quarterly on the discharge from Outfall 001, as required in Table 2 below, for the purpose of gaining more data on the quality of the discharge. The discharge from Outfall 002 is considered to be of the same quality, so no separate monitoring of that outfall is required. In the future, when the effluent limits are in effect, effluent sampling will likely be required at a higher frequency.

Table 2, Self-Monitoring and Reporting Requirements for Outfall 001			
Parameter	Frequency	Sample Type	Units
Flow ^{a/}	Continuous	Recorder	MGD
Total Recoverable Antimony	Quarterly	Composite	ug/L
Total Recoverable Cadmium	Quarterly	Composite	ug/L
Total Recoverable Lead	Quarterly	Composite	ug/L
Total Recoverable Mercury	Quarterly	Composite	ug/L
Total Recoverable Zinc	Quarterly	Composite	ug/L
Phosphorus	Quarterly	Composite	ug/L
TSS	Quarterly	Composite	mg/L
Dissolved Oxygen	Quarterly	Grab	mg/l
pH	Quarterly	Grab	Standard Units
Chronic Biomonitoring	2 tests in permit term ^{b/}	Grab	IC 25 > 100% effluent Pass/Fail

^{a/} An estimated total daily average flow, over the reporting period, from both outfalls combined, must be reported.

^{b/} Two chronic WET tests will be performed during the permit term on effluent from a pilot scale treatment plant of representative effluent from the blended Judge and Spiro feedwaters. The blended feeds will be representative of actual ratios of feedwaters from the two tunnels that will result from the management configuration of the finished treatment project for both tunnel effluent streams. One WET test will be performed during the high flow Spring period and the other separated by approximately six months during the low flow Fall period. The chronic test will be run on the two species, Ceriodaphnia dubia (water flea) and Pimephales promelas (fathead minnow). The chronic WET tests will be done in accordance with Section I. 3. B). If toxicity is detected no further investigation or testing will be required during this permit period.

ANTI-DEGRADATION POLICY

Under Utah Administrative Code R317-2-3.5.8.d. An Anti-degradation Level II Review will be required by the Director of the Division of Water Quality for discharges to waters with a Class IC drinking water use assigned. Since Park City is discharging into a tributary of a Class IC drinking water source, Park City will be required to conduct an Anti-degradation Level II Review. Park City has submitted a Level II ADR with a preliminary analysis of alternatives for the purposes of this permit. This review will help Park City decide what the City needs to do to come into compliance with the effluent limitations above, and is part of the 'Stipulated Compliance Order'. More complete alternatives' analyses and updated ADRs, if needed, will be

submitted by Park City at a future time as specified in the Stipulated Compliance Order.

REPORTING

The permit will require reports to be submitted quarterly on Discharge Monitoring Report forms or by NetDMR electronically for each quarterly reporting period, all due by the 28th day of the month following the reporting period. Lab sheets for biomonitoring must be attached to the biomonitoring Discharge Monitoring Report forms.

STORM WATER

According to *Utah Administrative Code 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 G (Metal Mine Facilities I Industry, SIC Major Group 10)*. This is because the storm water will not likely come in contact with, or be contaminated by any overburden, raw material, intermediate product, finished product, by product, or waste product located on the site of the operation.

BIOMONITORING REQUIREMENTS

A nationwide effort to control toxic discharges where effluent toxicity is an existing or potential concern is regulated in accordance with the State of Utah Permitting and Enforcement Guidance Document for Whole Effluent Toxicity (WET) Control (biomonitoring). Authority to require effluent biomonitoring is provided in Permit Conditions, *Utah Administrative Code R317-8-4.2*, Permit Provisions, *Utah Administrative Code R317-8-5.3* and Water Quality Standards, *Utah Administrative Code R317-2-5* and *R317-2-7.2*.

Since the Judge Tunnel discharges are to drinking water source (*Class 1C*), and a cold water fishery (*Class 3A*) waters, and the current effluent concentration of a few parameters appear unable to meet the effluent limitations for Table 1, there is reasonable potential for toxicity to exist in the discharge of Outfall 001. However, the expected chemistry of the effluent is expected to change in the future as this discharge may be combined with another water source (Spiro Tunnel) and/or treatment may be provided. Data collected on chronic WET testing, which would be a report only requirement during this permit term based on the SCO, will be conducted during pilot testing of Spiro and/or a combination of Judge and Spiro waters. This testing will be for two species, *Ceriodaphnia dubia* (water flea) and *Pimephales promelas* (fathead minnow) conducted for each test as detailed in the permit. No additional follow-up testing process will be required during this permit term.

Although they won't go into effect during this permit term, the requirements for a full chronic WET testing process are also included in this permit to conform to the EPA requirement that all future permit limits must be included in permits where the compliance schedules will extend beyond the permit term. At this time acute WET testing is not considered to be necessary in future permits, however, use of acute WET testing may be considered in future permits if the need for such testing is identified.

As this project includes a long term compliance schedule, it is recommended that such similar

abbreviated WET testing be conducted at the beginning of each five-year permit cycle to track long term trends in toxicity, until more rigorous testing may be required when the full effluent limits become effective.

PERMIT DURATION

It is recommended this permit be effective for the duration of five years from the effective date of issuance.

Drafted by:
John Kennington, Engineering Manager
Utah Division of Water Quality,
August 27, 2014

PUBLIC NOTICE

Began:
Ended:

Public Noticed in The Park Record

Signed this XXXX day of XXXXX.

John Kennington, Eng Mgr.



