Surface Water Sampling and Analysis Plan
Resighini Rancheria
Section 106 Water Quality Assessment
Clean Water Act Project

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Section 1 INTRODUCTION

On April 4, 2004 the Resighini Rancheria Tribe applied to the U.S. Environmental Protection Agency, Region IX, for a Clean Water Act Section 106 grant. The Tribe was successful in its application and received a grant for the 2004 Federal fiscal year in the amount of $42,692. The Tribe accepted the grant award on October 1, 2004.

The FY 2004 grant funded preparation of a water quality assessment report and supporting studies. The Tribe is committed to developing its technical capabilities to water quality management and support its future application for Section 106 Authority, or "treatment as a state" status, for purposes of the Clean Water Act. After gaining Section 106 Authority, the Tribe intends to pursue obtaining further authority to adopt water quality standards and regulate waste discharges to waters within its jurisdiction. Because Clean Water Act Section 303 grants this authority only to the EPA, states, and tribes with treatment as a state status, gaining Section 106 Authority is the first step in the process. We have a water quality ordinance in place and we enforce it on the Rancheria

A water quality assessment report is a report which delineates all water bodies within a study area, evaluates the water quality of each body, which designates beneficial uses and determines the degree of designated use support, and identifies causes of water quality impairment. Under Clean Water Act Section 305(b), each state must develop a program to monitor the quality of its surface and ground waters and prepare a water quality assessment report describing the status of its water quality. The required water quality assessment report, also referred to as the 305(b) Report, must be prepared every 5 years, with annual updates. Native American Tribes are exempt from Section 305(b) reporting requirements, however, EPA encourages Tribes to develop the capability to assess and report on the quality of Tribal water resources.

A water quality monitoring program has been developed for the Rancheria. The primary purpose of the monitoring program is to generate data that will support assessment of the quality of Tribal waters and preparation of the 305(b) Report. A secondary purpose of the program is to provide Tribal personnel an opportunity to gain hands-on experience in field-monitoring of surface water quality, developing and implementing quality assurance and quality control measures, recording and managing data, and evaluating and interpreting the data. Monitoring will occur at selected surface water sites located on-Rancheria, as well as at off-Rancheria sites that are tributary to or riparian to the Rancheria. Specific monitoring activities will include field-water quality measurements for temperature, conductivity, dissolved oxygen, turbidity, and pH .

Resighini Rancheria plans to begin monitoring at the “fundamental level”, as defined in EPA guidelines; thus we will only be recording physical measurements (temperature, pH, turbidity, dissolved oxygen, and conductivity) until we have gained enough experience to attain "intermediate level" status. Until we attain such status and identify funding for laboratory analysis of phosphorus and nitrogen, we will not be dealing with an analytical laboratory. Our revised plan contemplates storage of the data captured by our multi-probe sonde in a proprietary format, and development of software to reconfigure the data and upload it to STORET. Our Water Resource Technician will have primary responsibility for data input and organization. Interpretation and trend plotting will be done in conjunction with similar efforts by the other KBTWQWG member tribes.

101 Site Name

Monitoring sites include surface waters given in Table 1.

102 Site Location

Monitoring sites are located within or contiguous to the Resighini Rancheria, located in Klamath, California. All sites are situated within the Lower Klamath River Basin.

103 Responsible Agency

The Resighini Rancheria Environmental Protection Authority (REPA) will be conducting the monitoring program under the direction and supervision of Rob Cozens, Director, REPA. The REPA Project Manager, Frank S. Dowd, will conduct all field work, monitoring and sampling.

104 Project Organization

Quality Assurance Officer:	Rob Cozens, Director REPA (707) 482-3413
REPA Project Manager:	Frank S. Dowd Water Resources Technician, REPA (707) 482-3414

105 Activities Affecting Water Quality

The Rancheria is open to public access via U.S. Highway 101 and Klamath Beach Road, and, as a result, the Rancheria has suffered a history of illegal dumping of every nature of waste on its lands and in its waters. Over the years the Tribe has spent thousands of dollars in an effort to prevent illegal dumping and illegal water pollution through clean-up and enforcement efforts. With the assistance of the U.S. Environmental Protection Agency through the Indian General Assistance Program and more recently, the CWA section 106 Grant process, the Tribe developed the Resighini Environmental Protection Authority (REPA) and enacted several laws addressing illegal dumping and water quality. We believe we have one of the most comprehensive water quality ordinances in Indian Country and it is vigorously enforced by REPA.

Due to the openness of the Rancheria there is always a danger of pollutants being introduced into our waters. Due to the shallowness of the aquifer there is always a danger of pollutants leaching into the water servicing our well and contaminating the potable water supplied to the community by our Public Water System. REPA conducts daily patrols in an effort to prevent polluting activities. We believe constant vigilance is required if we are to continue protecting the viability of our precious water resources.

Our waters are a life source for our people and for our community and, very importantly, for the salmonid fishery using our waters for winter refugia and seasonal spawning.

106 Statement of the Specific Long Range Goal & Initial Monitoring

It is the long range goal of the Resighini Rancheria to take on the responsibility of protecting and enhancing water quality within its jurisdiction. This is being accomplished through development and implementation of a water quality program that includes water quality control planning, the establishment of water quality standards, and the enforcement of those standards through regulation of waste discharges.

A step toward achieving the Tribes long range goal is to compile a complete base of information on the quality of Tribal surface waters. Once a complete base has been developed, work on interpreting and evaluating it to assess the status of Tribal water quality can begin.

At present our monitoring will be limited to turbidity, temperature, pH, dissolved oxygen, and conductivity. Chemical analysis of surface water will be done after we gain proficiency in sampling techniques, as funding becomes available. Chemical analysis of our groundwater supply is performed annually and as needed and is funded through the Resighini Rancheria Public Water System which is operated by the Resighini Environmental Protection Authority.

107 Location

Monitoring sites for the sampling and analysis program are located within or contiguous to the Resighini Rancheria located in Klamath, California. Water bodies hydrologically connected or tributary to Tribal waters may also be monitored because of the direct relationship between tributary water quality and Tribal water quality. All sites are situated within the Lower Klamath River Basin.

Section 2 Existing Information Base: Previous Investigations and Available Data

Following are brief descriptions and evaluations of major sources comprising the existing information base on water resources of the Resighini Rancheria. Deficiencies in the information base are also described.

201 Hydrologic and Water Quality Data – Regulatory Involvement – Sampling Frequency and Rationale

The USEPA and the California State Water Resources Control Board/North Coast Regional Water Quality Control Board are, respectively, the federal and state agencies responsible for implementing water quality control programs within the study area. These responsibilities including designation of beneficial uses and assessment of the degree to which observed water quality supports those beneficial uses. State jurisdiction does not extend to the interior boundaries of the Rancheria.

Many important Tribal waters within the study area have either not been assessed or not adequately assessed. It is the goal of the Tribe to implement a monitoring program that will ultimately provide information on which assessments can be made.

Since there is no data on our surface waters, we intend to do biweekly monitoring commencing in May of each year and running through October in coordination with monitoring efforts of other Klamath Basin Tribal Water Quality Work Group member tribes. Additionally, during winter months, we intend to monitor during and after storm events in an effort to compile sufficient data to help us with our fishery preservation projects. We recently discovered that Rancheria waters serve as winter refugia for endangered coho salmon and other anadromous species, and we want to preserve these important habitats through proper management. Our monitoring data will be an important tool in this effort.

202 PROJECT DATA QUALITY OBJECTIVES

202(a) Data Use

The data generated from the monitoring program will be used:

- To begin building a database which ultimately will support the assessment of the quality of Tribal surface and the degree of beneficial use support by comparing observed water quality against water quality criteria established by our Water Quality Ordinance and by the EPA.

- Provide data on Rancheria waters for inclusion in the EPA STORET database.

203 Project Task

The sampling and analysis task will focus on obtaining field measurements of surface waters at key locations within the Rancheria. The water bodies targeted for measurement and analysis are all natural waters. No soil, sediment, or effluent discharges will be sampled.

204 Expected Data Quality

The purpose of the field measurement, sampling and analysis exercise is to build a database which will ultimately support assessment of the quality of Tribal waters. Neither widespread nor acute contamination is believed to exist in the waters to be examined; nor is the data intended to be used to quantify potential health or environmental impacts. Therefore, the sampling protocols and associated level of quality assurance is intended to enable maximum data collection within the constraints of available funding, while providing adequate quality assurance.

205 Data Management

Several steps will be performed to ensure that data are transferred accurately from collection to analysis to reporting. These include: 1) adherence to the established sample collection and transportation protocols; 2) thorough and complete documentation of the sampling procedures in field notebooks; 3) adherence to EPA-approved analytical methods and reporting requirements; and 4) the use of computer software to compile & analyze all collected data and upload same to STORET.

206 Assessment Oversight

Quality assurance oversight will be the responsibility of the Project Quality Assurance Officer (QAO), Director, REPA. The QAO will oversee all sampling activities and will ensure that all elements of this plan are followed. The QAO will periodically participate in field sampling surveys and will immediately notify the field sampling team if he notes any deviations form the sampling and analysis plan to ensure that the deviations are corrected. If deviations occur that could possibly jeopardize the integrity of a particular sample or sampling event, the QAO will notify the EPA Project Manager. All deviations and remedies will be noted in the quarterly project progress report submitted to EPA.

Section 3 SAMPLING DESIGN

301 Surface Water Sampling Locations

The surface water sampling locations are*:

1. Waukell Creek.
2. An unnamed creek running parallel to Klamath Beach Road.
3. Junior Creek
4. An unnamed stream approximately 1.0 miles east of U.S. 101, running parallel to Klamath Beach Road.

5. An unnamed stream approximately 1.25 miles east of U.S. 101, running parallel to Klamath Beach Road.
6. Pond One at the west end of the Klamath River Overflow Channel.
7. Pond Two at the west end of the Klamath River Overflow Channel.
8. Pond Three approximately .75 miles east of U.S. 101 and parallel to Klamath Beach Road.
9. The Klamath River as it runs riparian to the north boundary of the Rancheria.

*See Table 1 for precise GPS locations.

302 Baseline Composition

This group of analyses has been developed to provide information on baseline physical composition of the surface waters within the Rancheria. Information from the initial sampling program will serve as the foundation for building a database which ultimately will support assessment of Tribal water quality. Future sampling activities will build on this database.

303 Ground Water Sampling

Ground water sampling and analysis is addressed in a separate document, "Coliform Sample Siting Plan for the Resighini Public Water System."

304 Analyses of Concern

Table 1 contains a listing of the analyses of concern. This group of analyses has been selected to assess the baseline physical nature of the waters within the Rancheria given the available resources. This group will serve as the foundation for additional sampling activities in the future.

305 Sample Identification

Table 1. Sample and Site Identification

Sample I.D. Number*	Location	Matrix	Analysis
S-1 N41° 30.662' W124° 01.663' Elev. – 14'	Waukell Creek near 101 hwy on Klamath bch RD	Surface water	General Physical
S-2 N41° 30.738' W124° 01.431' Elev. – 5'	Unnamed Creek run's parallel with Klamath bch RD	Surface water	General Physical

S-3 N41° 30.705' W124° 01.171' Elev. 4'	Junior Creek approx. 0.5 mile east on Klamath bch Rd from 101 hwy	Surface water	General Physical
S-4 N41° 30.821' W124° 00.836' Elev. 14'	Unnamed stream about 1.0 miles east on Klamath bch RD	Surface water	General Physical
S-5 N41° 30.816' W124° 00.751' Elev. 20'	Unnamed stream about 1.25 miles east on Klamath bch Rd	Surface water	General Physical
P-1 N41° 31.048' W124° 01.399' Elev. – 16'	Pond One West end of Klamath River overflow Channel	Surface water	General Physical
P-2 N41° 31.056' W124° 01.399' Elev. – 15'	Pond Two West end of Klamath River Overflow Channel	Surface water	General Physical
P-3 N41° 30.734' W124° 01.409' Elev. – 1'	Pond 3 East on Klamath Beach Road	Surface water	General Physical
R-1 N41° 31.002' W124° 01.661' Elev. – 18'	Klamath River Riparian to the Rancheria	Surface water	General Physical

*GPS elevations are not reliable in this geographic area. The Rancheria is too close to the Pacific Ocean and GPS elevation readings are influenced by tides and ocean swells.

Section 4 STANDARD OPERATING PROCEDURES (SOP)

The following sections describe the field methods and procedures for collecting this data.

401 Field Equipment

A Manta 2 multiprobe data sonde manufactured by Eureka Environmental will be used to capture surface water general physical characteristics. These data will be stored on a Motion Computing F5 Tablet PC. All field equipment will be properly maintained pursuant to manufacturer specifications.

402 Calibration of Field Equipment

Four of the Manta 2's data sensors will require calibration before use in the field: pH, dissolved oxygen, turbidity, and conductivity. Initially calibration will be performed every four weeks, beginning with the first sampling date in May. The Manta 2's Calibration Log will be reviewed after twelve weeks of sampling, and the calibration schedule for each sensor may be modified based on historical results.

Each probe will be calibrated according to the manufacturer's specifications (included in the operator manuals) at the beginning of every other measurement event. The calibration will occur in the office prior to departing for the field. Records of calibration are automatically logged on the computer to which the Manta 2 is attached.

Calibration is simply telling the instrument what it should be reading by checking it with a calibration solution of known value. The general procedures are:

1) Clean the sensor and perform any necessary sensor-specific maintenance.
2) Select a calibration standard whose value is similar to the values you expect to see in the field. For example, calibrate with a 1413 µS Specific Conductance standard if you expect to see Specific Conductances between 500 and 1000 µS in the field. Don't calibrate with a sea water standard. For best results, use fresh calibration solutions, and discard once they have been used.
3) Rinse sensors thoroughly (more than once may be required) with DI (deionized) water, especially if you have been using other calibration solutions to calibrate other parameters. Shake the transmitter vigorously to remove traces of old calibration solutions – repeat if necessary.
4) Rinse the sensors twice with a small quantity of your calibration standard. Discard the used calibration standard.
5) Immerse the sensor in the calibration standard; this is usually accomplished with the Manta 2's calibration cup. Secure your Manta with the sensors pointing up, and fill the calibration cup with your calibration standard. Make sure the standard covers the sensor entirely, and that it also covers the thermistor for those parameters that are temperature-compensated.
6) Select the parameter to be calibrated from the menu in the Manta 2 Control Software user interface software. First, enter the calibration value and press enter; when the reading has stabilized, press enter to calibrate. The Manta 2 will report the resulting Sensor Response Factor (SRF); then press Y to accept the calibration, N to back up one step, or Exit to leave the sensor uncalibrated.

Also included in the Calibration Record is each calibration's Sensor Response Factor (SRF). Suppose that a typical Conductivity sensor reports 100 µA in a 1413 µS/cm standard. If your Conductivity sensor reports 100 µA in that same calibration solution, then your SRF is 100% (some parameters, such as pH, have a more complex SRF calculation, but the effect is the same). If your response is 80 µA, your SRF would be 80%. When you press the OK button to accept a calibration, the Manta 2 automatically accepts your calibration if the SRF is between 60% and 140%. If the SRF falls outside that range, you will be cautioned to check your standard value, make sure the sensor is clean, make sure the reading has stabilized, etc. But you can elect to accept any SRF.

Every Manta 2 has a dedicated data file called CAL.LOG. The CAL.LOG remembers every calibration that your instrument has accepted. In this Calibration Record are the time and date of the calibration, the parameter calibrated, the reading before the calibration was accepted, and the reading after the calibrations was accepted. If you wished to know, for instance, the last time that Conductivity was calibrated, the Calibration Record would tell you when the most recent Conductivity calibration was accepted, the value of the calibration standard, and the instrument's reading in the standard before the calibration was made (to tell you exactly how much the instrument was changed during calibration). This data cannot be altered within the Manta 2.

402.a SOP Manta 2 pH Sensor, from the Manufacturer's Manual

pH is measured as the voltage drop across the glass membrane of a pH electrode. A reference electrode is used to complete the voltage-measuring circuit. The pH glass is specially formulated to absorb water so that ions (particularly H+ and OH-) in the water are attracted to the glass to offset the ionic constituency of the pH electrode's internal electrolyte. As a result, there is a charge separation across the glass, and that's the voltage we measure. pH readings are automatically compensated for temperature.

pH electrode maintenance is nothing more than occasionally cleaning the glass surface with a soft cloth and soapy water. The important part of pH maintenance is refilling the reference electrode (see 402.e).

You can choose a one, two, or three point pH calibration. The two-point calibration, a seven buffer and a second buffer whose value is near that of the waters you intend to monitor, is recommended. If you are measuring in waters whose pH might range above and below seven, you can increase your accuracy slightly by choosing a three-point calibration (the third buffer should be on the other side of seven). pH calibration is simple:

1) Rinse your sensors several times with the pH buffer you'll use for calibration.
2) Fill the calibration cup with enough buffer to cover both the pH and reference electrodes.
3) Follow the Manta 2 Control Software calibration instructions.

4) Repeat steps 1, 2, and 3 if you choose to calibrate with one or two more standards.

402.b SOP Manta 2 Optical DO Sensor, from the Manufacturer's Manual

The optical dissolved-oxygen sensor comprises a blue light source, a sensing surface, and a red light receiver. The sensing surface is an oxygen-active compound stabilized in an oxygen permeable polymer, usually silicone. The oxygen-active compound fluoresces – that is, it absorbs energy in the form of blue light and then emits energy as red light. The red-light receiver measures the amount of red light emitted as a result of the blue light's energy. However, this fluorescence is quenched by oxygen – that is, the emission of red light is reduced if oxygen molecules are present to interfere with the oxygen-active compound.

As the oxygen presence grows, the red light emitted falls. When the sensing surface is exposed to water (or air, for that matter), oxygen diffuses into the sensing surface according to the amount (partial pressure) of oxygen in the water. Thus, the amount of red light received by the sensor is directly relatable to the amount of oxygen in the water.

The sensor output is corrected for the temperature characteristics of the membrane, and for the temperature characteristics of oxygen saturation in water. Optical dissolved-oxygen sensor maintenance is nothing more than occasionally cleaning the sensing surface (the red material; about a centimeter diameter) with a soft cloth and soapy water.

Your Manta 2 needs to know the local Barometric Pressure (BP) in order to calibrate the Optical Dissolved Oxygen sensor. To obtain local BP, use the F5's Internet browser to access http://www.wunderground.com/us/ca/klamath.html#PWS and read the BP for Station ASOS HFM Crescent City. Then set the BP by typing the correct value (in mm Hg) in the first box of the Set BP screen.

The optical dissolved oxygen sensor requires two calibration points: one at zero dissolved oxygen, and one at the saturation point.

To set the sensor's zero point:

1) Prepare a zero-oxygen solution by dissolving a few grams of sodium sulfite and a pinch of cobalt chloride in a half-liter of tap water.
2) Fill your calibration cup until your aerated water covers the sensor by a centimeter or so.
3) Make sure your instrument's Barometric Pressure setting is accurate.
4) Wait a few minutes for the temperature to equilibrate.
5) Follow the Manta 2 Control Software calibration instructions.

To set the sensor's saturation point:

1) Put a half-liter of tap water in a liter jar and shake the jar vigorously for one minute. Take the lid off the jar and let the water stand for about five minutes to let the air bubbles float out.
2) Fill your calibration cup until your aerated water covers the DO sensor by a centimeter or so.
3) Make sure your instrument's Barometric Pressure setting is accurate.
4) Wait a few minutes for the temperature to equilibrate.
5) Follow the Manta 2 Control Software calibration instructions.

402.c SOP Manta 2 Turbidity Sensor, from the Manufacturer's Manual

Turbidity is measured as the fraction of an infrared light beam that is scattered at 90° to that beam. More particles in the water mean more the light is scattered and so the turbidity reading is higher. Any material that accumulates on the optical surfaces of the turbidity sensor is indistinguishable from material in the water; that's why most turbidity sensors have little wipers to clean the window(s).

Turbidity sensors require no regular maintenance, but you might check occasionally to make sure the optical window (i.e. the little glass port on the front of the sensor) has not been damaged by overzealous wiping.

Turbidity uses a two-point calibration; one point is zero turbidity and the other point should be a standard approximating the turbidity of the water you intend to monitor. Care must be taken during calibration to ensure that external effects are kept to a minimum and that enough calibration standard to cover the sensor's "optical volume" - imagine tennis ball stuck on the end of the sensor; make sure there are no objects in the volume represented by that ball. One common method is keeping calibration solutions in one-liter, dark, wide-neck bottles with a nonreflective finish (such as Nalgene® 2106 bottles in amber).

For the zero calibration:

1) Make sure the turbidity sensor is fully immersed (i.e. at least an inch of solution over the sensor) in zero-turbidity standard and has an unobstructed optical path.
2) Follow the Manta 2 Control Software's calibration instructions.

For the other calibration point:

1) Rinse your sensors several times with the standard you'll use for calibration.
2) Make sure the turbidity sensor is fully immersed (i.e. at least an inch of solution over the sensor) in the standard and has an unobstructed optical path.
3) Follow the Manta 2 Control Software's calibration instructions.

A clean wiper means better measurements. If the wiper pad is deteriorating or is clogged with debris from your water (algae, silt, etc.), you should change the wiper pad. For best results, you might consider changing the wiper pad prior to each long term deployment: **Please do not over-tighten the set screw (that'll strip the threads) or rotate the wiper arm manually (that'll strip the gears).**

1) Loosen the small set screw on the wiper with the 1.5mm hex key provided.
2) Remove the wiper from the wiper shaft.
3) Place a new wiper on the shaft so that the set screw faces the flat spot on the wiper shaft
4) Gently press the wiper against the face of the probe until the foam pad is compressed to roughly three quarters of its original thickness. It is important that the wiper arm body does not make contact with the probe face – only the pad should be in contact. A gap of 0.5mm between the wiper body and the probe face is typical when a new pad has been installed.
5) Tighten the set screw.

402.d SOP Manta 2 Conductivity Sensor, from the Manufacturer's Manual

Eureka uses the four-electrode method for determining water conductivity. Two pairs of graphite electrodes are situated in a stable geometry (you can barely see the electrodes; they look like two bull's eyes inside the slot on the conductivity sensor). A constant voltage is applied to one of each electrode pair, and the amount of current required to maintain that voltage is measured. As the conductivity of the water increases, the current increases.

The zero point for the sensor is set electronically, so you only have to set one point:

1) Fill the calibration cup with your conductivity standard to cover the conductivity sensor. Tap gently on the cup to make sure there aren't bubbles trapped in the conductivity sensor.
2) Follow the Manta 2 Control Software's calibration instructions.

The Manta 2 actually reports Specific Conductance – that's Conductivity standardized to 25°C. Your reading is the conductivity of your water if that water were heated or cooled to exactly 25°C. Conductivity has several other forms, Total Dissolved Solids (TDS) and Salinity. You can't calibrate TDS or salinity directly because they are calculated from Conductivity. You can, however, calibrate TDS with a TDS standard by adjusting the conductivity calibration point until the TDS standard produces the desired TDS reading. The same is true for Salinity. or Salinity with a standard qualified on the Practical Salinity Scale (PSS).

402.e SOP Manta 2 Reference Electrode, from the Manufacturer's Manual

The key to reliable pH measurement (and reliable ORP and ISE measurements as well) is a well maintained reference electrode. Recall that a reference electrode is required to complete voltage measurement for pH readings. Reference electrode maintenance is simple:

1) Remove the reference cap by unscrewing it from the reference sleeve and discard old reference electrolyte.
2) Fill the sleeve completely with fresh pH reference electrolyte (KCl saturated with silver chloride). Be careful not to introduce any air bubbles.
3) With the sensors facing up, screw the reference cap back on to the sleeve. Air should be purged through the Teflon junction when replacement is done.

As you screw the sleeve into place, the excess electrolyte is forced out of the sleeve through the reference electrode junction (the white, porous circle at the end of the sleeve). This not only purges bubbles from the electrolyte, but also cleans nasty stuff out of the junction.

403 Surface Water Sampling

Composite samples will not be collected, only grab samples. All grab samples will be taken from flowing, not stagnant water, preferably in the middle of the stream or pond. In shallow waters, efforts will be made to take readings from areas with shift currents. In all cases, the field technician will strive to ensure that readings are taken at representative locations within each body of water.

Data collection at each site is a four step process:

1) With the F5 TPC turned on, connected to the Manta 2, and running the Manta 2 software, immerse the probe until all sensors are under water.
2) Keep the sensors immersed for five minutes.
3) Click on "Capture One Line of Data to PC with Annotation" from the Manta 2 screen
4) Type the site location id (eg: P-3, R-1, S-5) in the Annotate Snapshop popup and click on "OK"

404 Decontamination Procedures

The field measurement equipment will be rinsed with the surface waters to be sampled prior to and following any measurement. The surface waters are not known to be contaminated therefore no additional decontamination will be performed.

Section 5 DISPOSAL OF RESIDUAL MATERIALS

501 Disposal Methodology

This project will generate limited quantities of non-hazardous investigation-derived wastes (IDW). These wastes include spent calibration solutions, paper towels, latex gloves, and purge water.

- Used PPE and disposable equipment will be double bagged and placed in a municipal refuse dumpster on site. These wastes are not considered hazardous and can be sent to a municipal landfill. Any PPE and disposable equipment that is to be disposed of which can still be reused will be rendered inoperable before disposal in the refuse dumpster.
- All calibration solutions will be disposed of to the ground surface via a hose in the general area in which they were used.

Section 6 SAMPLE DOCUMENTATION AND SHIPMENT

601 Field Notes

601(a) Field logbooks

The Motion Computing F5 Tablet PC will be used to maintain field logbook entries used to document all elements of the sampling exercise. Logbook entries will be complete and accurate enough to permit reconstruction of field activities. Only factual, objective information will be recorded.

At a minimum, the following information will be recorded during the collection of each sample:

- Sample location
- Sampler's name(s)
- Date and time of sample collection
- Field instrument readings
- Field observations and details related to analysis or integrity of samples (e.g., weather conditions, noticeable odors, colors, insufficient water depth, etc.)

In addition to the sampling information, the following specific information will also be recorded in the field logbook for each day of sampling:

- Team members
- Time of site arrival/entry on site and time of site departure
- Other personnel on site
- Deviations from sampling plans, site safety plans, and QAPP procedures

602 Photographs

Digital photographs will be taken at the sample location and at other areas of interest on site, when appropriate. They will serve to verify information entered in the field logbook. For each photograph taken, the following information will be written in the logbook or recorded in a separate field photography log:

- Time, date, location, and weather conditions
- Description of the subject photographed
- Name of person taking the photograph

Section 7 QUALITY CONTROL

701 Field Variances

As conditions in the field may vary, it may become necessary to implement minor modifications to sampling as presented in this plan. When appropriate, the QAO will be notified and a verbal approval will be obtained before implementing the changes. Modifications to the approved plan will be documented in sampling project report.

702 Field Health and Safety Procedures

REPA will not test in or around any terrain or water flow that appears to be hazardous to the testing team. Before entering the stream it will be determined whether it is a safe level and speed. There will always be two technicians when sampling streams for safety. Two-way radio walkie-talkies will be taken along for quick emergency calls. The crew will also take a first-aid kit.