



Memorandum

June 9, 2016

To	Dianne Philipps – Rockland County Sewer District No. 1		
Copy to	Robert Butterworth		
From	Ray Schofield	Tel	315.679.5800
Subject	Update Water Reuse Study - Alternative No. 2 Rockland County Sewer District No. 1	Job no.	11110885.0

A drought threatened the Rockland County water supply in the Summer of 2002. In response, GHD was retained to prepare a report to evaluate reusing effluent from wastewater treatment plants to augment Rockland County’s drinking water supply. A draft report was developed and provided to Rockland County Sewer District No. 1 (RCSD No. 1) in 2002. Since this report was drafted, various infrastructure projects have been implemented across the County. In consideration of these improvements, GHD was again retained to update the draft report, specifically Alternative No. 2.

OVERVIEW

As part of the update to the draft report prepared in 2002, RCSD No. 1 requested Alternative No. 2 (Section 7.2) be modified based on various improvements since the report was drafted. The updates to Alternative No. 2 included two discharge locations with two flow conditions to provide high quality effluent from the Orangeburg Wastewater Treatment Plant (WWTP) to the Hackensack River Basin.

An upgrade to RCSD No. 1 WWTP in Orangeburg and conveyance system would need to be constructed to deliver high quality effluent water from WWTP to the Hackensack River Basin (2 or 5 mgd). This high quality effluent water would be discharged into Lake DeForest or Lake Tappan. Thus, Alternative No. 2 is being updated to include four alternatives. The following is a brief description of the alternatives for this update:

- Alternative No. 2.1a - Modification to WWTP - Discharge at Northern End of Lake DeForest (2 mgd)
- Alternative No. 2.1b - Modification to WWTP - Discharge at Northern End of Lake DeForest (5 mgd)
- Alternative No. 2.2a - Modification to WWTP - Discharge at Lake Tappan near Orangeburg Road (2 mgd)
- Alternative No. 2.2b - Modification to WWTP - Discharge at Lake Tappan near Orangeburg Road (5 mgd)

During the development of the draft report in 2002, NYSDEC, United Water and Rockland County Department of Health had requested that any improvements to the existing RCSD No. 1 treatment facility be required to generate effluent that meets the state’s Class A water source requirements. Under this alternative, the upgraded plant would be designed to treat to a level that meets or exceeds NYSDEC Class A water source requirements and U.S. Environmental Protection Agency’s Guidelines for Water Reuse when using municipal effluent for augmenting water supplies. Meeting these requirements would result in a reuse water quality that would exceed the current water quality level of the Hackensack River.

Figure 1 identifies the location of a proposed alignment of reuse water force main and proposed locations of reuse water discharge points.

ADVANCED WASTEWATER TREATMENT PROCESSES

The current unit processes located at the RCSD No. 1 WWTP in Orangeburg allows for the treatment of up to 28.9 mgd on a 12 month rolling average in accordance with the current SPDES permit.

The proposed upgrade to the facility would provide advanced treatment of 2 or 5 mgd of flow, depending on the chosen alternative. The proposed advanced treatment system would provide a sidestream process train capable of treating 2 or 5 mgd.

REUSE WATER INFRASTRUCTURE

For Alternative Nos. 2.1a and 2.1b, reuse water from the upgraded RCSD No. 1 WWTP (sidestream process train) would be pumped from a main reuse water pump station at the Orangeburg WWTP to the proposed Reuse Water Pump Station No. 1 located near Townline Road. From there, it would be pumped to the Reuse Water Pump Station No. 2 located near McCarthy Way, then to the discharge point located at the northern end of Lake DeForest (refer to Figure 1).

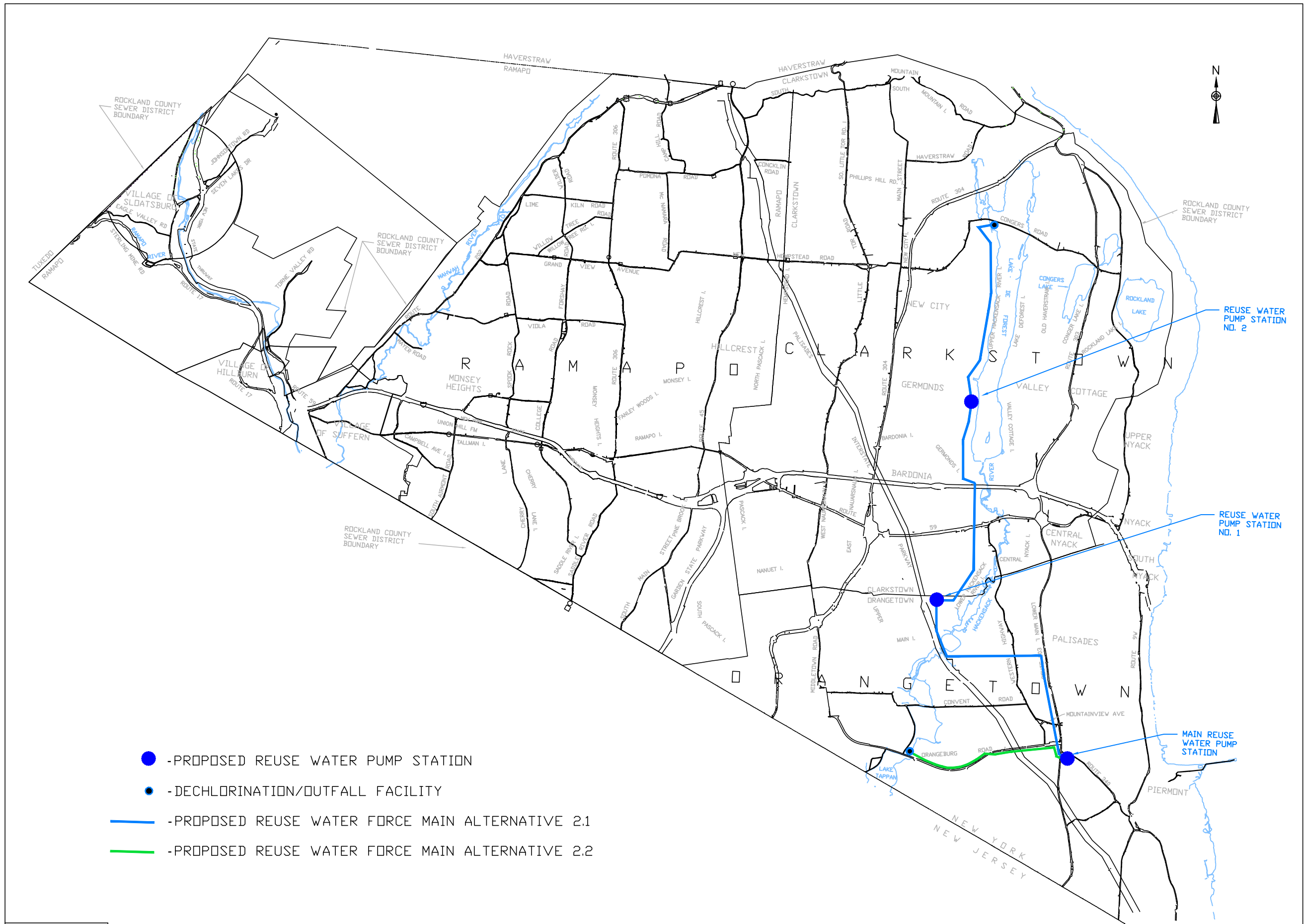
For Alternative Nos. 2.2a and 2.2b, reuse water from the upgraded RCSD No. 1 WWTP would be pumped from a main reuse water pump station at the Orangeburg WWTP to Lake Tappan near Orangeburg Road. This alignment would follow Orangeburg Road (refer to Figure 1).

PROBABLE COST

The existing RCSD No. 1 WWTP would be upgraded to generate 2 or 5 mgd of reuse water. This upgrade would be done using a sidestream process train. A reuse water conveyance system would also be constructed to convey reuse water back to the Hackensack River Basin (2 or 5 mgd) at either of two points. The following table summarizes the Engineers Opinion of Probable Project Cost for the listed alternatives and annual operation and maintenance cost.

Item	Estimated Construction Cost	Estimated Fiscal, Legal, Engineering	Estimated Project Cost	Estimated Annual O&M
Alternative No. 2.1a - Modification to WWTP Discharge at Northern End of Lake DeForest (2 mgd)	\$54,000,000	\$16,000,000	\$70,000,000	\$1,200,000
Alternative No. 2.1b - Modification to WWTP, Discharge at Northern End of Lake DeForest (5 mgd)	\$74,000,000	\$22,000,000	\$96,000,000	\$1,500,000
Alternative No. 2.2a - Modification to WWTP, Discharge at Lake Tappan near Orangeburg Road (2 mgd)	\$38,000,000	\$11,000,000	\$49,000,000	\$900,000
Alternative No. 2.2b - Modification to WWTP, Discharge at Lake Tappan near Orangeburg Road (5 mgd)	\$59,000,000	\$18,000,000	\$77,000,000	\$1,000,000

RRS/dlr
Attachment



- - PROPOSED REUSE WATER PUMP STATION
- - DECHLORINATION/OUTFALL FACILITY
- - PROPOSED REUSE WATER FORCE MAIN ALTERNATIVE 2.1
- - PROPOSED REUSE WATER FORCE MAIN ALTERNATIVE 2.2

UNAUTHORIZED ALTERATIONS OR ADDITIONS TO A PLAN BEARING A LICENSED ENGINEER'S SEAL IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW

NO	DATE	DESCRIPTION	NO	DATE	DESCRIPTION
REVISIONS					

DESIGNED BY : _____
 DRAWN BY : M.R.S.
 CHECKED BY : _____
 PROJ. ENGR. : _____

ROCKLAND COUNTY
 SEWER DISTRICT No. 1
 4 ROUTE 340, DRANGEBURG
 ROCKLAND COUNTY, NEW YORK

UPDATE TO ALTERNATIVE No. 2
 RCSD No. 1 WWTP AND REUSE WATER

FIGURE 1
 Not to Scale Date: MAR 2016 DWG. NO. 1/1