TOWN OF EDINBURGH

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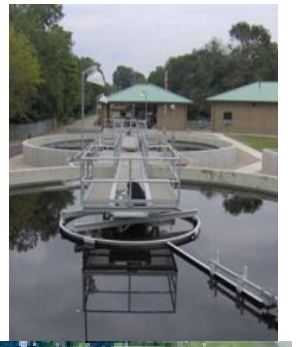
Dan Patterson

BIOSOLIDS HANDLING PROJECT CONTRACTOR
Walker & Sons
Construction, Inc.

WWTP IMPROVEMENTS PROJECT CONTRACTOR
Mitchell & Stark
Construction
Company, Inc.

CONSULTING ENGINEER
M.D. Wessler
& Associates, Inc.

EDINBURGH WASTEWATER TREATMENT PLANT




TOWN OF Edinburgh INDIANA

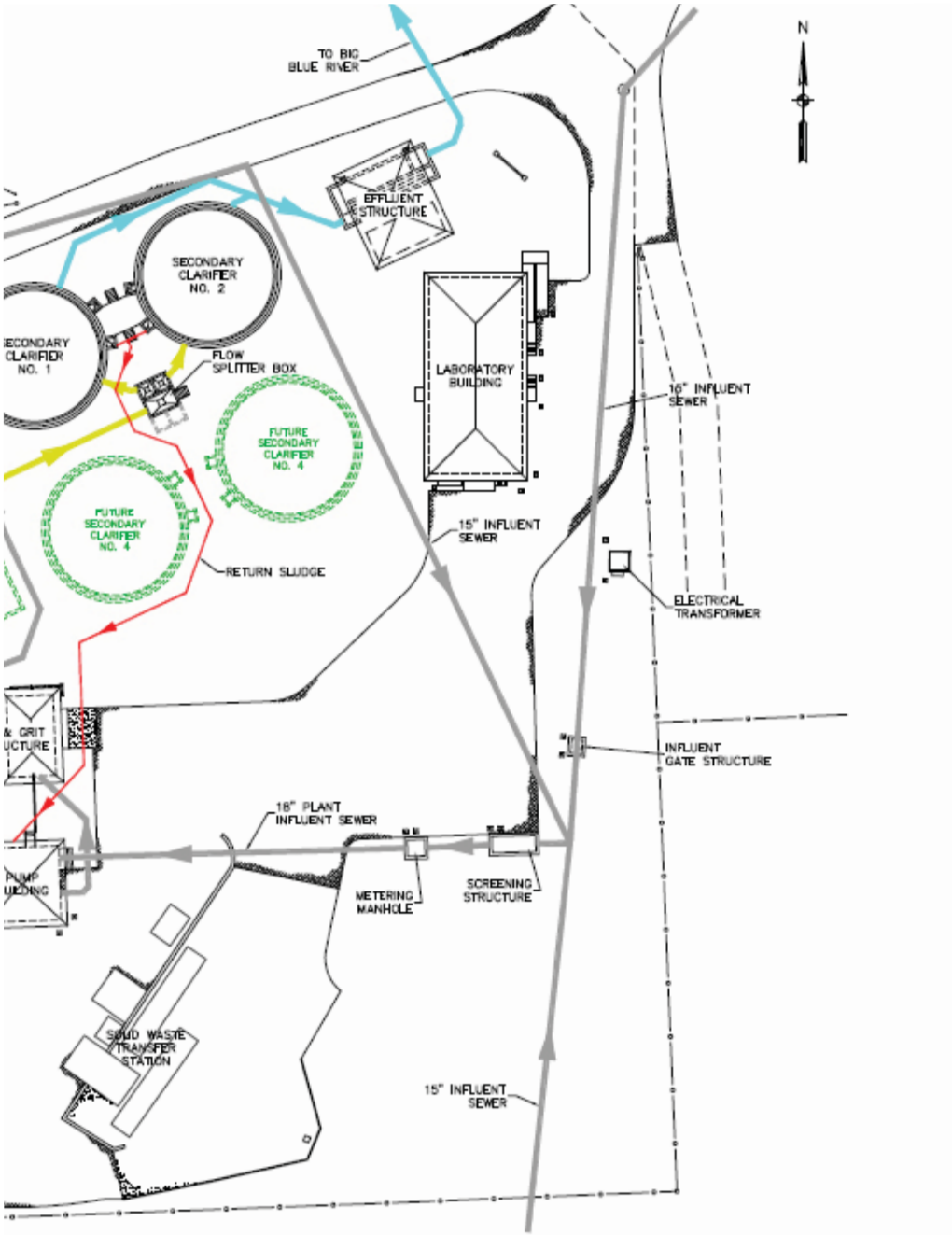
BIOSOLIDS HANDLING & WASTEWATER TREATMENT PLANT IMPROVEMENTS

TOWN OF EDINBURGH, INDIANA

PROJECT BACKGROUND

Due to the potential for residential and commercial growth, the Town of Edinburgh embarked on successive projects to study and assess its long-term future wastewater needs. In addition to increasing wastewater flows, the Town's existing wastewater treatment plant (WWTP) was aging and in need of modernization. Although the facility was well-operated and without significant permit violations, the structures and equipment were deteriorating and becoming costly and time-consuming to maintain and repair.

M. D. Wessler & Associates, Inc. of Indianapolis was hired to evaluate the present condition of the facility and recommend improvements and expansion to serve the future needs of the Town. After evaluating several methods of sludge handling to replace the existing and costly method of liquid sludge hauling and disposal, the Town selected the alkaline stabilization method to produce a Class A biosolid.



TOWN OF Edinburgh INDIANA

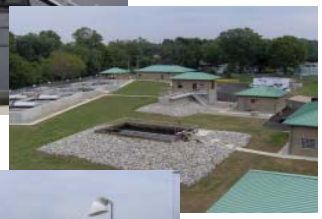
BIOSOLIDS HANDLING PROJECT CONSTRUCTED BY:

WALKER & SONS CONSTRUCTION, INC.

Completed in June, 2002

WESSLER & ASSOCIATES CONSULTING ENGINEERS

After the Town addressed the more immediate need of improvements for handing waste solids, Wessler was hired to evaluate and recommend improvements for the remaining portion of the facility, which was addressed in a Preliminary Engineering Report (PER). It was recommended that the Town replace the existing trickling filter/rotating biological contactor (RBC) facility with a bio-mechanical vertical loop reactor (VLR) activated sludge facility designed to handle an average daily flow of 1.5 MGD and a peak flow of 3.0 MGD. The project also planned for the future expansion of the facility to 3.0 MGD average daily flow and to be ultimately expandable to 6.0 MGD.



Major Improvements Included:

- Influent Grinder
- Raw Sewage and Return Sludge Pumps with Variable Frequency Drives (VFD's)
- Mechanical Fine Screen
- Aerated Grit Removal
- Vertical Loop Reactors (VLR's)
- Secondary Clarifiers
- UV Disinfection System
- Non-Potable Water System
- New Lab/Office Building
- Plant-Wide SCADA System

WASTEWATER TREATMENT PLANT IMPROVEMENTS PROJECT CONSTRUCTED BY:

MITCHELL & STARK CONSTRUCTION COMPANY, INC.

Completed in September, 2005

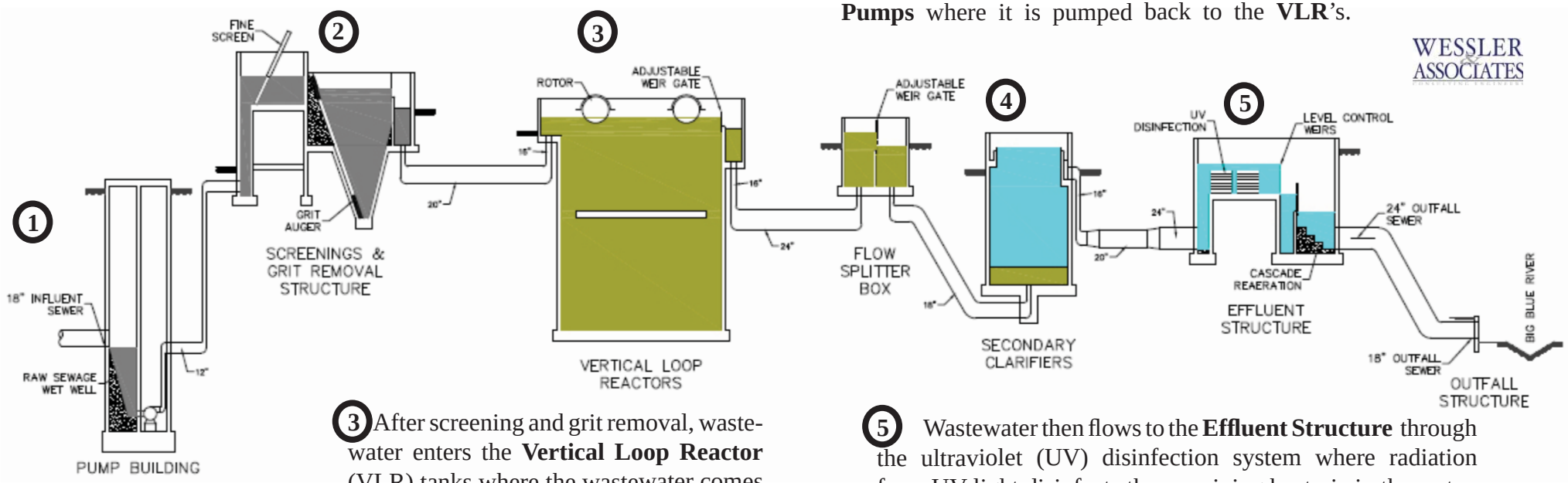
TOWN OF Edinburgh INDIANA

2 At the **Screenings & Grit removal Structure**, the raw wastewater passes through a mechanical **Fine Screen** to remove trash and debris that can damage downstream equipment. The fine screen also washes, compacts and dewaters the screenings for easier handling.

Flow then passes through an aerated **Grit Tank** to remove grit and heavier inorganic particles which otherwise accumulate in downstream tanks, increase wear on equipment and cause additional damage.

4 The "mixed liquor" from the VLR's flows to the **Flow Splitter Box** which evenly distributes the flow to each **Secondary Clarifier**. The clarifiers provide a quiescent zone to promote settling of the sludge.

The clarified wastewater flows over the top of the weirs while the sludge is withdrawn from the bottom of the tank and flows to the **Return Sludge Pumps** where it is pumped back to the **VLR**'s.



1 Flow enters the raw sewage wet-well where it is pumped by three **Raw Sewage Pumps** equipped with variable-speed drives. Two pumps have a combined capacity of over 3 MGD, with the third pump as standby. The raw sewage **Flow Meter** measures and totalizes the pumped flow.

3 After screening and grit removal, wastewater enters the **Vertical Loop Reactor** (VLR) tanks where the wastewater comes in contact with a mixed culture of bacteria to receive biological treatment. Mechanical rotors and diffused air create a highly mixed, aerobic condition that allows the bacteria culture ("bugs") to metabolize the organic matter ("food") in the wastewater.

The process is automatically controlled to vary the speed of the rotors and numbers of blowers providing aeration to maintain an optimum level of dissolved oxygen in the tanks.

5 Wastewater then flows to the **Effluent Structure** through the ultraviolet (UV) disinfection system where radiation from UV light disinfects the remaining bacteria in the water. The disinfected wastewater flows over the effluent weir for **Flow Metering** and onto cascade aeration steps to add dissolved oxygen to the effluent before discharging to the Big Blue River.

* Periodically, sludge from the Secondary Clarifiers is "wasted" to avoid excessive build-up of bacteria and is pumped to the Sludge Holding Tank, where it is aerated while awaiting further processing. The **Biosolids Handling Process** involves pumping the stored sludge to a **Belth Filter Press** which dewaters the sludge to reduce volume. It is then conveyed to a **Mixer** where lime and fly ash are introduced to stabilize the sludge and produce a Class A Biosolid. The biosolids are stored in a building until final disposal, such as application to farm fields.