Artificial Destratification

Module Manual

IGS WATER

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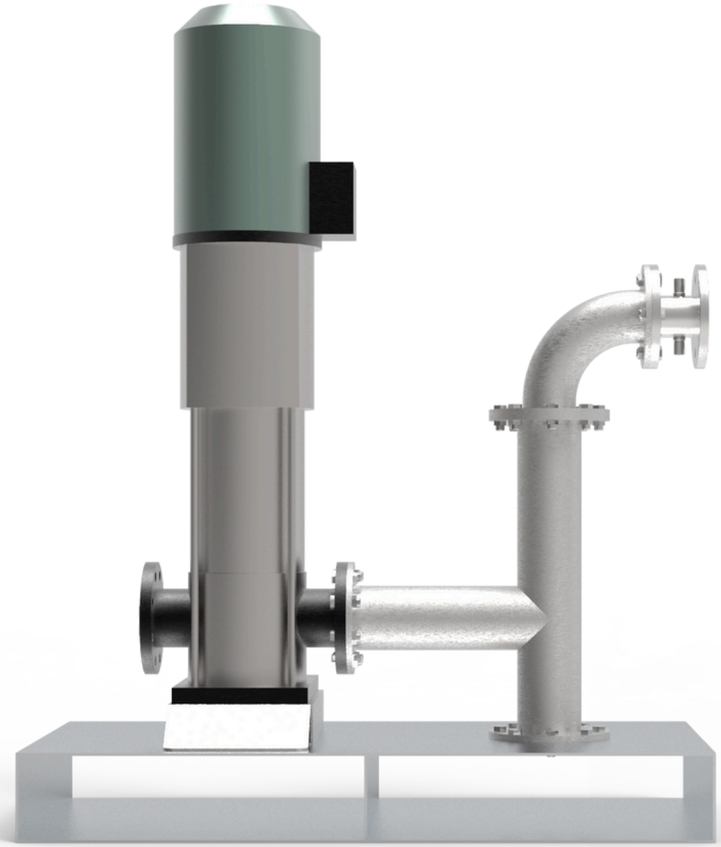
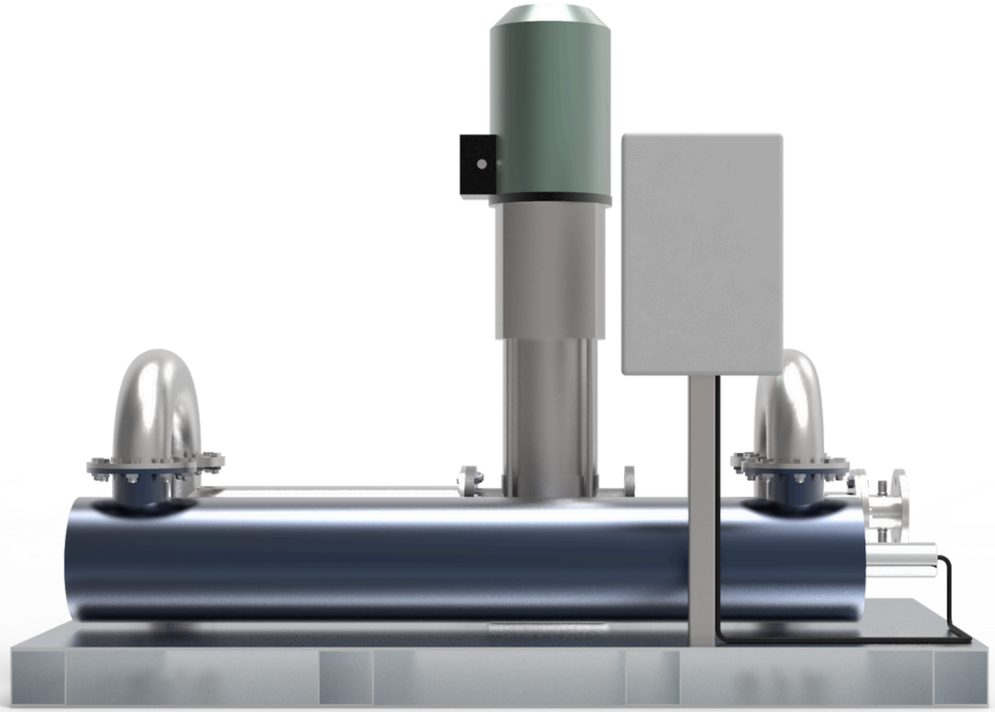
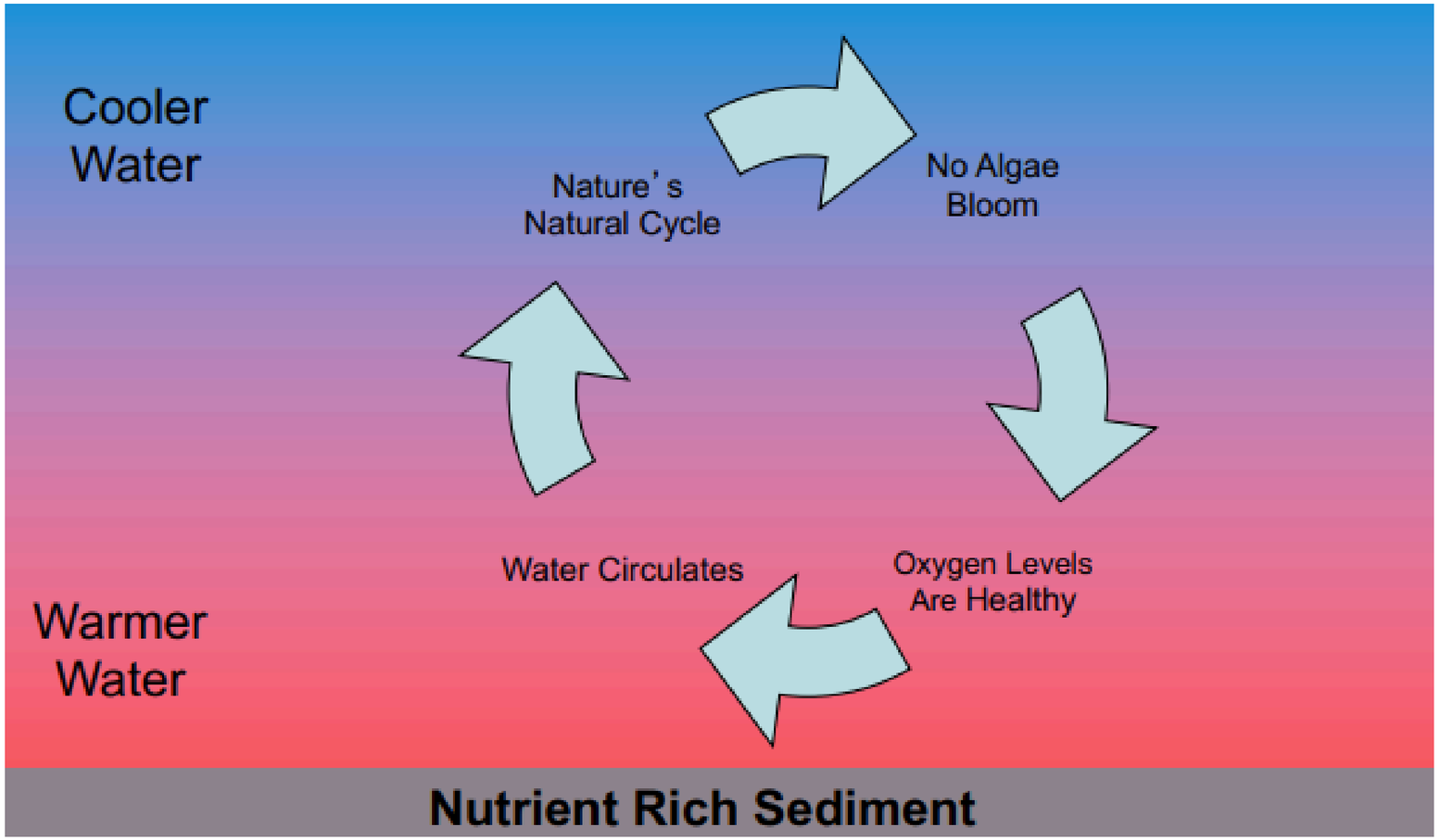




Designed to replicate natures winter thermal flow during the hot summer months.

Cross Section of Golf Course Lake

WINTER MONTHS

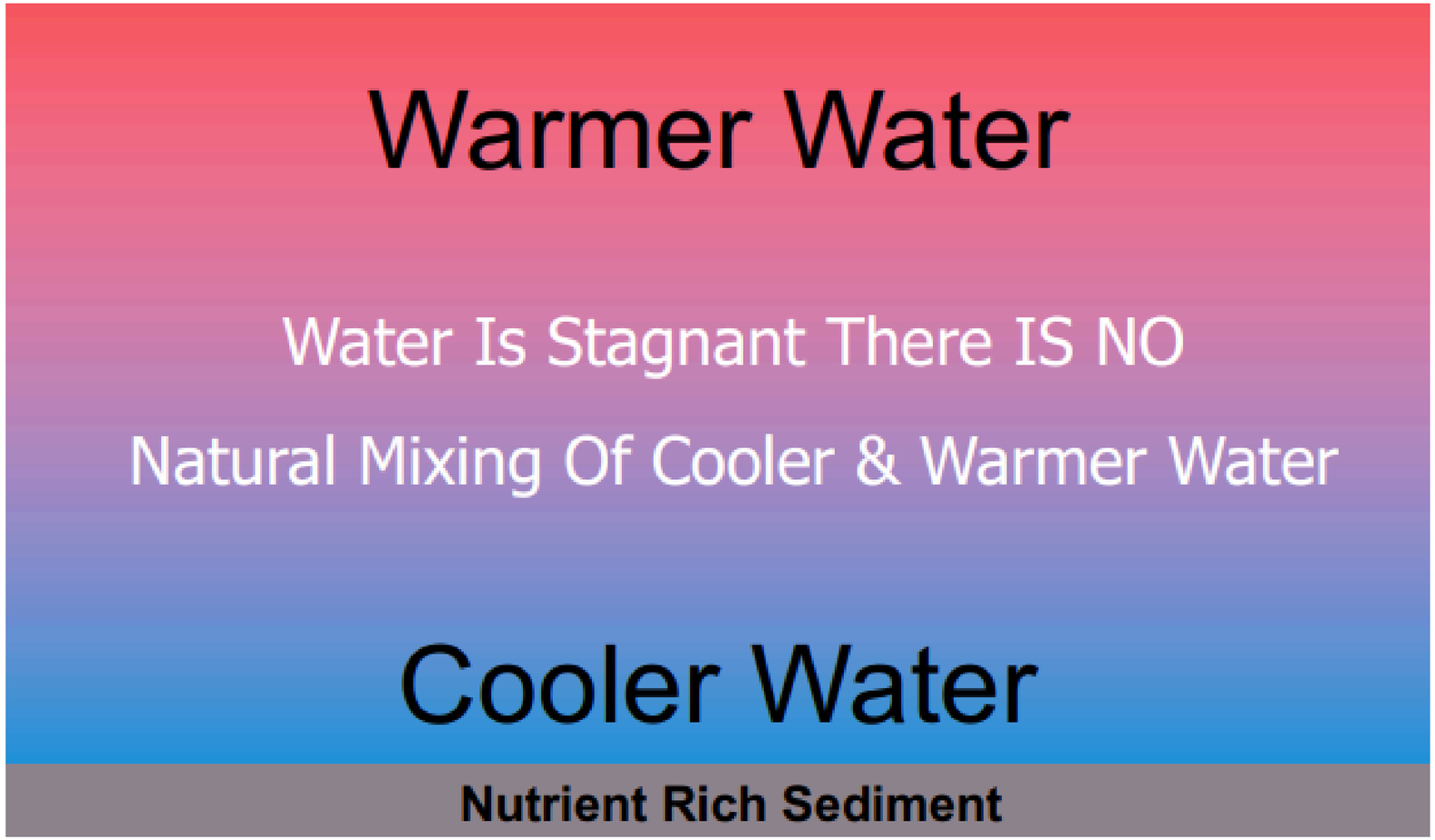


Water remains healthier due to the natural circulation, where warmer water moves up and oxygenated cooler water drops down to the lower levels.

Nutrients and contaminants settle at the bottom of the lake, so it is important to reduce the amount of contaminants entering the lake.

Cross Section of Golf Course Lake

SUMMER MONTHS

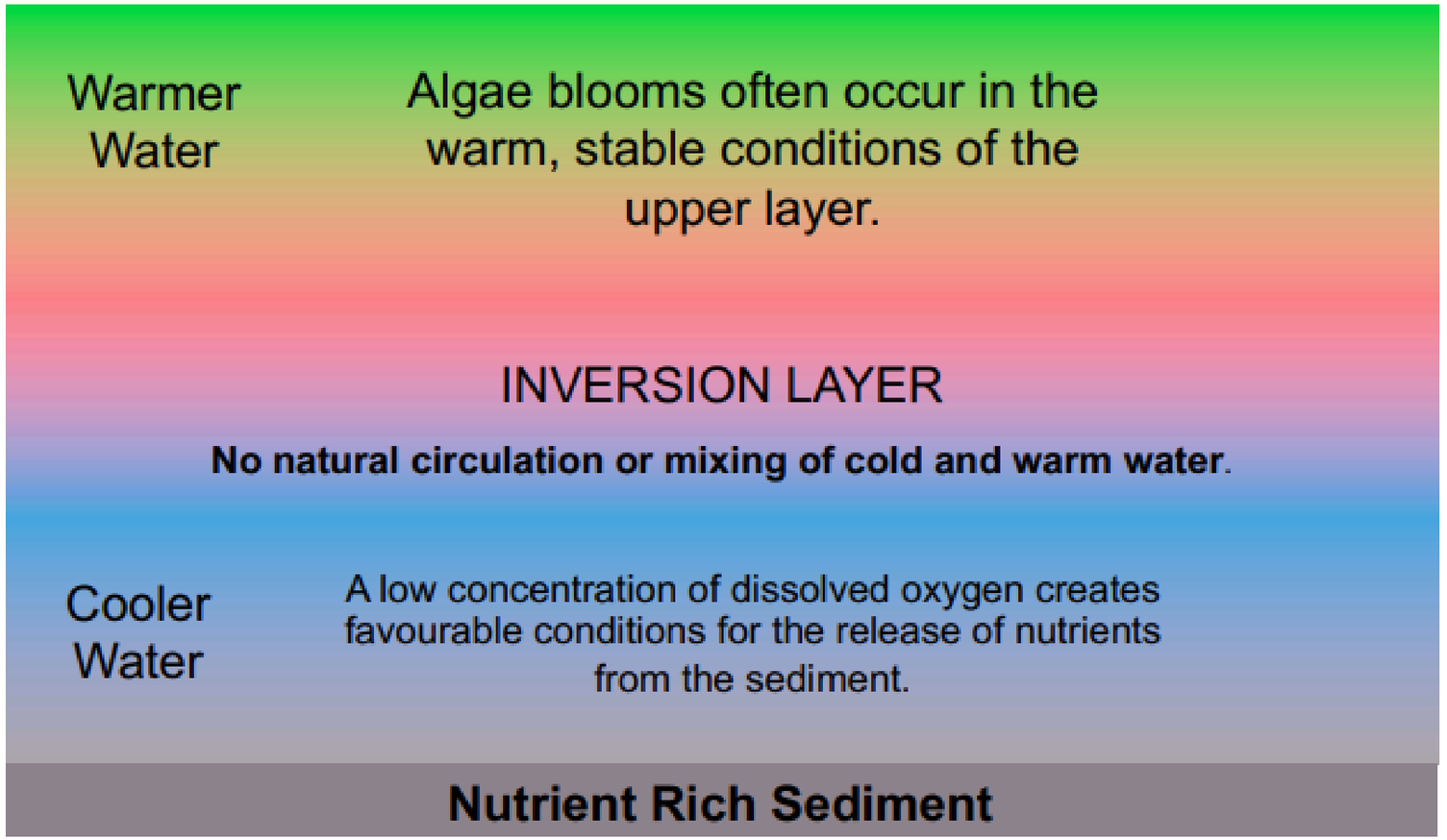


In the lake, conditions have reversed: cooler water is now at the bottom while warmer water forms the top layer. This disrupts the natural circulation of water from the depths to the surface. Consequently, oxygen levels in the deeper water become depleted.

To address this, it is crucial to reduce contaminants entering the lake.

Cross Section of Lake

SUMMER MONTHS



Artificial destratification involves increasing the circulation between the shallower and deeper layers of the lake.

Artificial Destratification

Water Recirculation System Include:

- Skid mounted pump, water conditioner & aerator.
- Skid mounted pump, water conditioner, UV disinfection & aerator.

Water Intake & Return Water:

- The suction point and return point are strategically positioned at opposite ends of the lake.

Suction Port Installation:

- Positioned as low as possible in the water table to prevent clogging with algae or mud.

Softerwater Conditioner and Aerator Operation:

- Enhances water quality through turbulence created by varying pressure zones.
- Air infusion in the aerator chamber alters mineral and nutrient composition, improving water softness and aeration.
- Thermal flow is created as air plumes rise to the surface.

Methods of Implementation:

- Installation of Softerwater Aerator at the dam's lowest point.
- Alternatively, a conditioned water fountain can achieve similar outcomes.

Circulation Pattern Establishment:

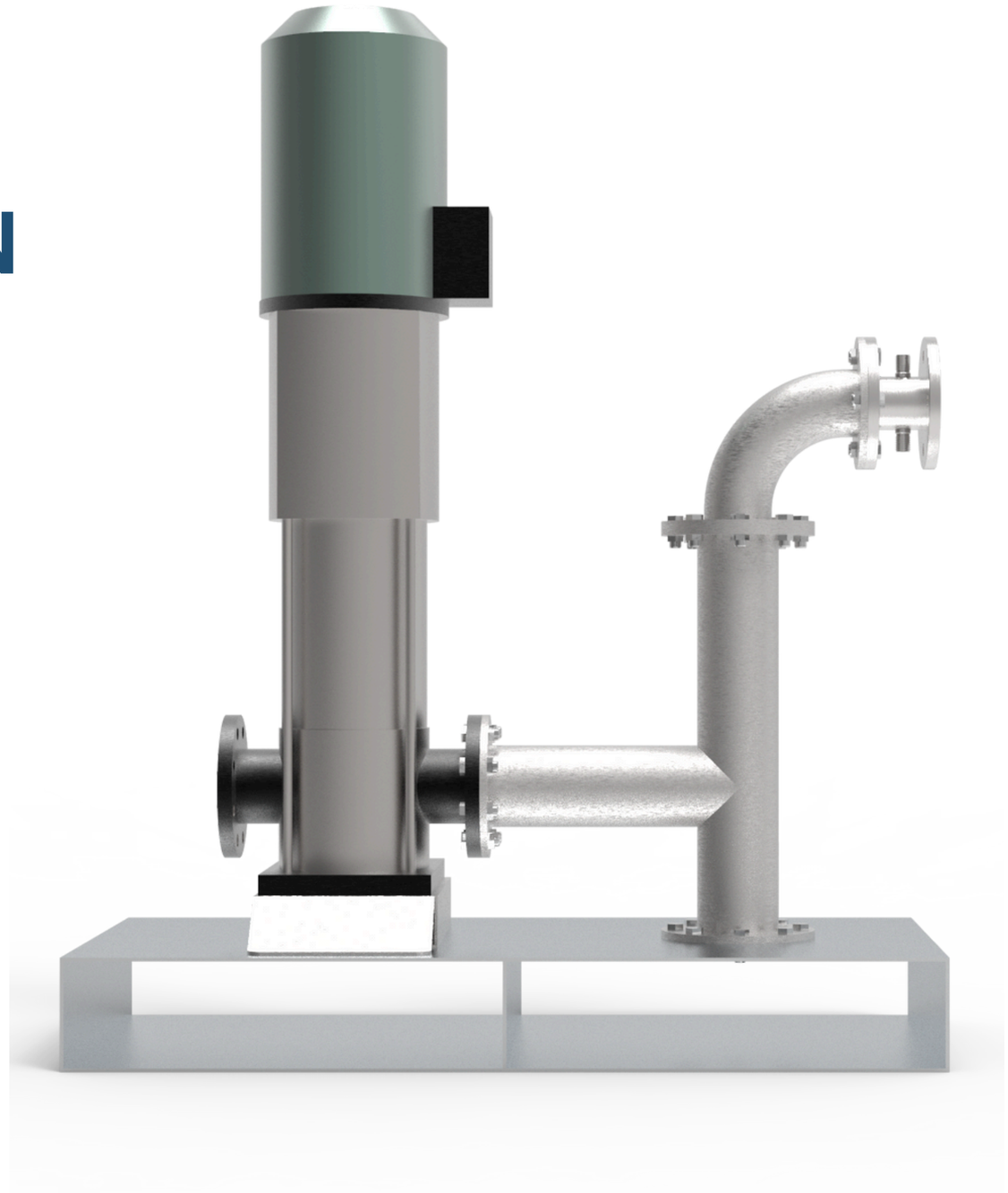
- Sets up a circulation pattern to minimize temperature, oxygen, and nutrient disparities between surface and bottom waters.

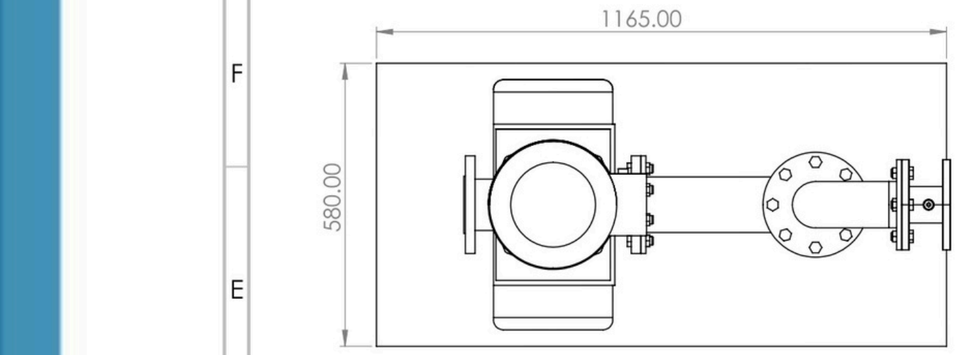
Algal Growth Reduction via Artificial Destratification:

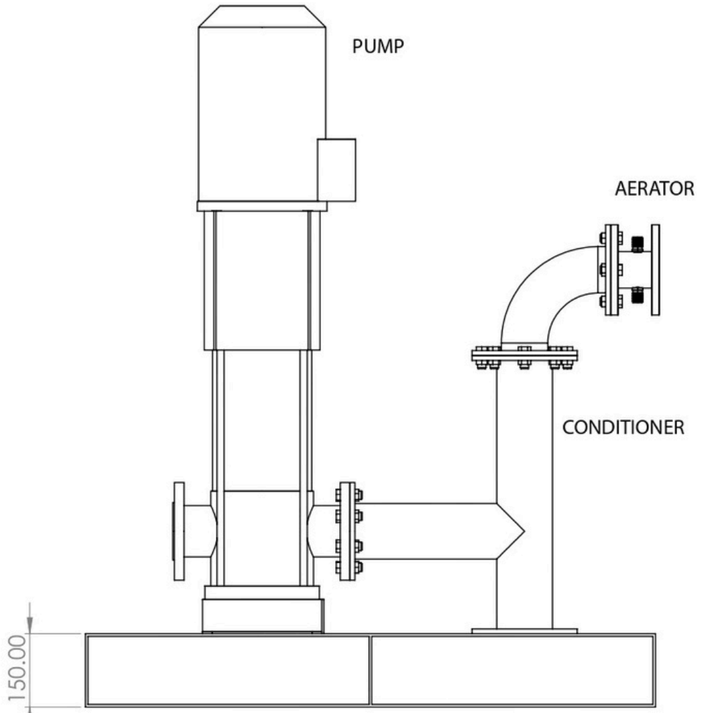
- Reduces sediment phosphorus load available to the water column, depriving algae of nutrients.
- Mixes algae deeper into the water column, depriving them of light.

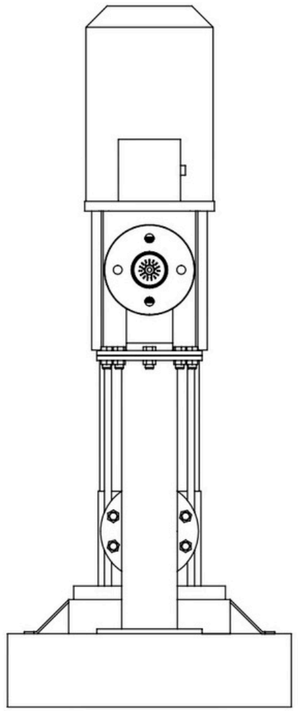
DESTRATIFICATION SKID 1

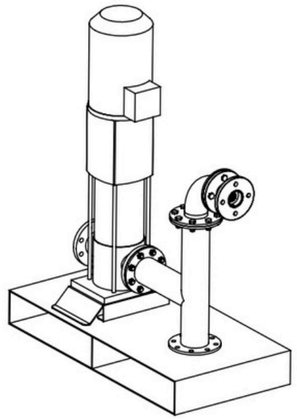
- Skid
- Pump
- Conditioner
- Aerator







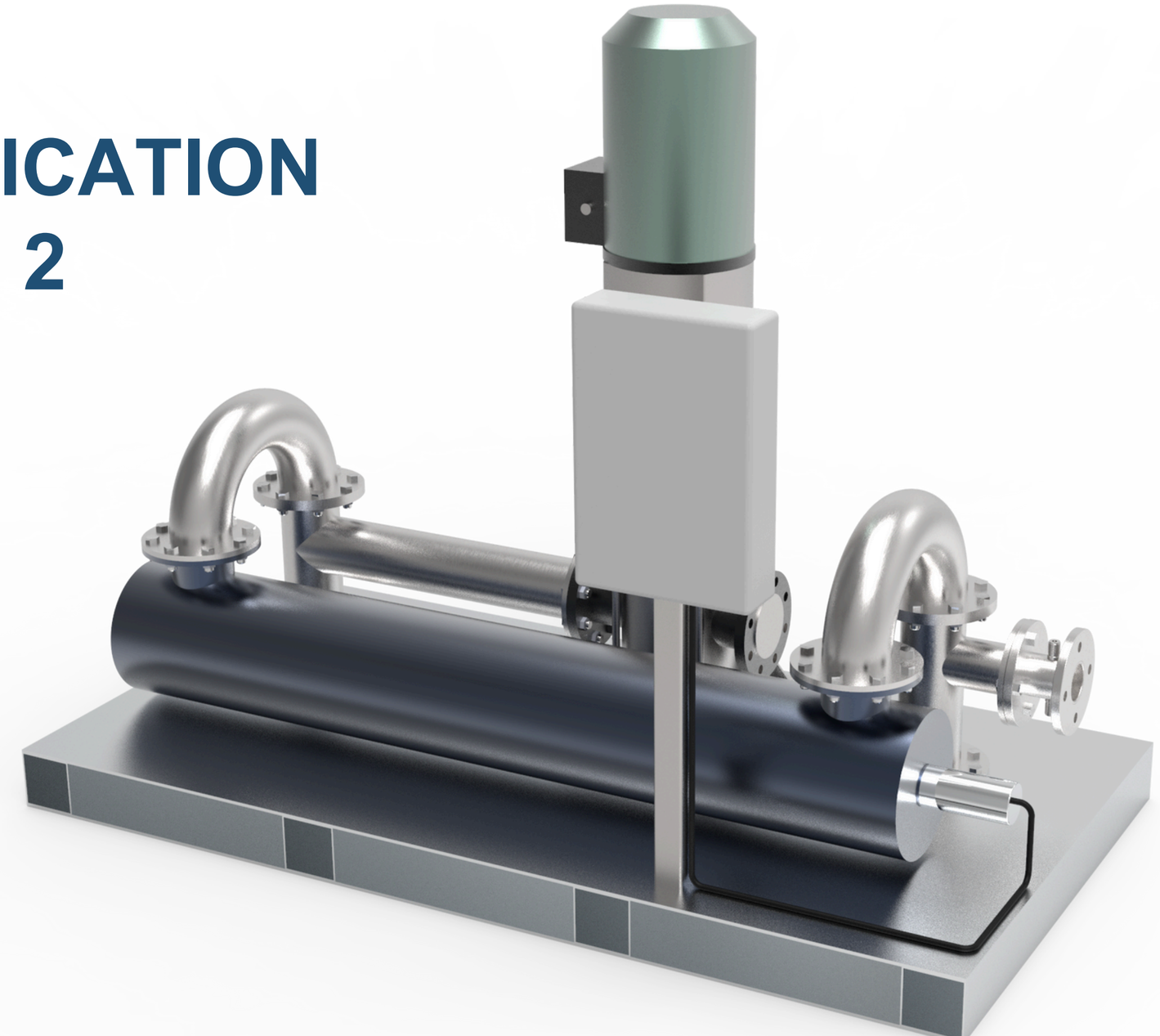


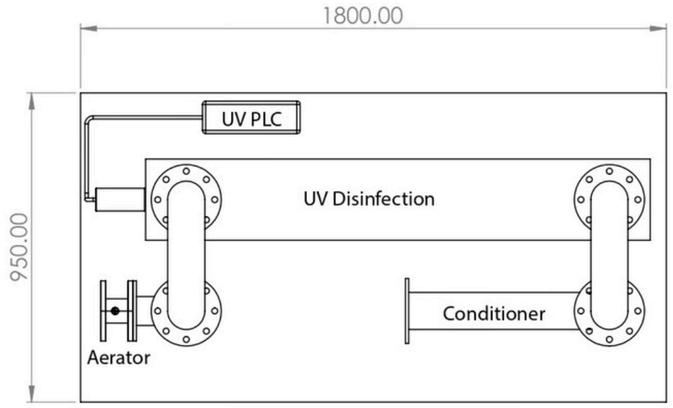


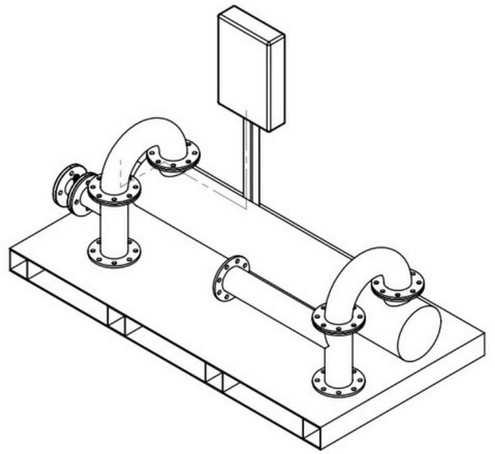
	NAME	SIGNATURE	DATE				TITLE:
DRAWN							Destratification Cube
CHK'D							
APPV'D							
MFG							
Q.A				MATERIAL:			DWG NO. A3
				WEIGHT:			SCALE:1:20 SHEET 1 OF 1

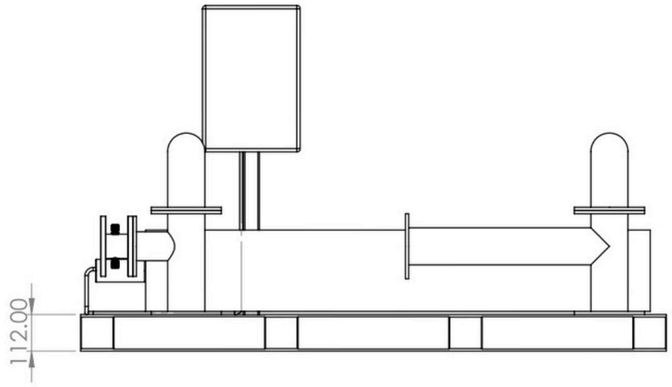
DESTRATIFICATION SKID 2

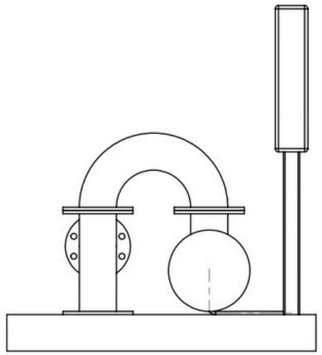
- Skid
- Pump
- Conditioner
- UV Disinfection
- Aerator











	NAME	SIGNATURE	DATE				TITLE:
DRAWN							Destratification Cube With UV
CHK'D							
APPV'D							
MFG							
Q.A				MATERIAL:			DWG NO. A3
				WEIGHT:			SCALE:1:20 SHEET 1 OF 1

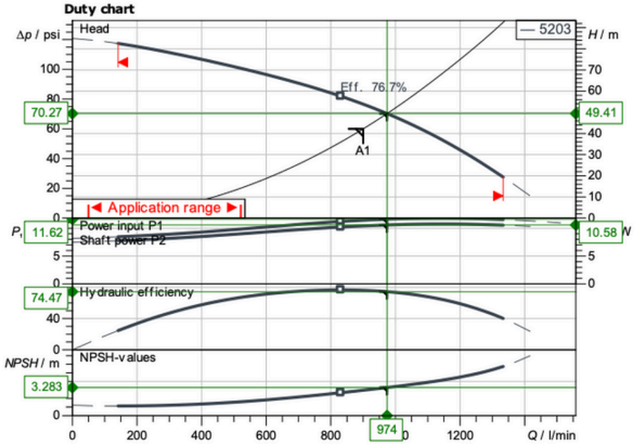
Technical data

High-pressure multistage centrifugal pump
Helix V 5203-1/16/E/KS/400-50

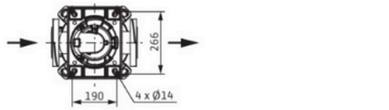
Project ID	Softerwater - Golf Course Pond cleaning
Project name	-
Installation location	
Customer pos. No.	

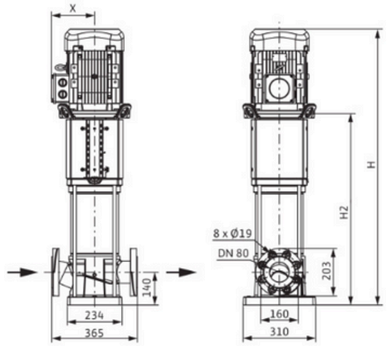
Date 2024-06-05

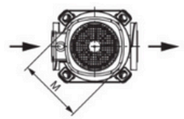
Duty chart



ISO 9906: 2012 3B







Dimensions mm

H	1216
H2	816
ØM	260
X	191
X	182

Requested data

Flow	900.00 l/min
Head	42.19 m
Media	Water 100 %
Fluid temperature	10.00 °C
Density	999.64 kg/m³
Kin. viscosity	1.30 mm²/s

Hydraulic data (Duty point)

Flow	974.01 l/min
Head	49.41 m
Shaft power P2	10.58 kW
Hydraulic efficiency	74.47 %
NPSH	3.28 m

Product data

High-pressure multistage centrifugal pump
Helix V 5203-1/16/E/KS/400-50

Max. operating pressure	232.1 psi
Inlet pressure max.	10 bar
Fluid temperature	-20 °C ... +120 °C
Max. ambient temperature	50 °C
Minimum efficiency index (MEI)	≥ 0.7

Motordata per Motor/Pump

Motor efficiency level	IE3
Mains connection	3~ 400 V / 50 Hz
Permitted voltage tolerance	+-10 %
Max. speed	2917 1/min
Rated power P2	11.00 kW
Rated current	21.00 A
Power factor	0.84
Service factor	1.15
Efficiency	
50% / 75% / 100%	90.3/91.3/91.2%
Degree of protection	IP55
Insulation class	F
Motor protection	No

Fitting dimensions

Pipe connection on the suction side	DN 80, PN 16
Pipe connection (pressure side)	DN 80, PN 16

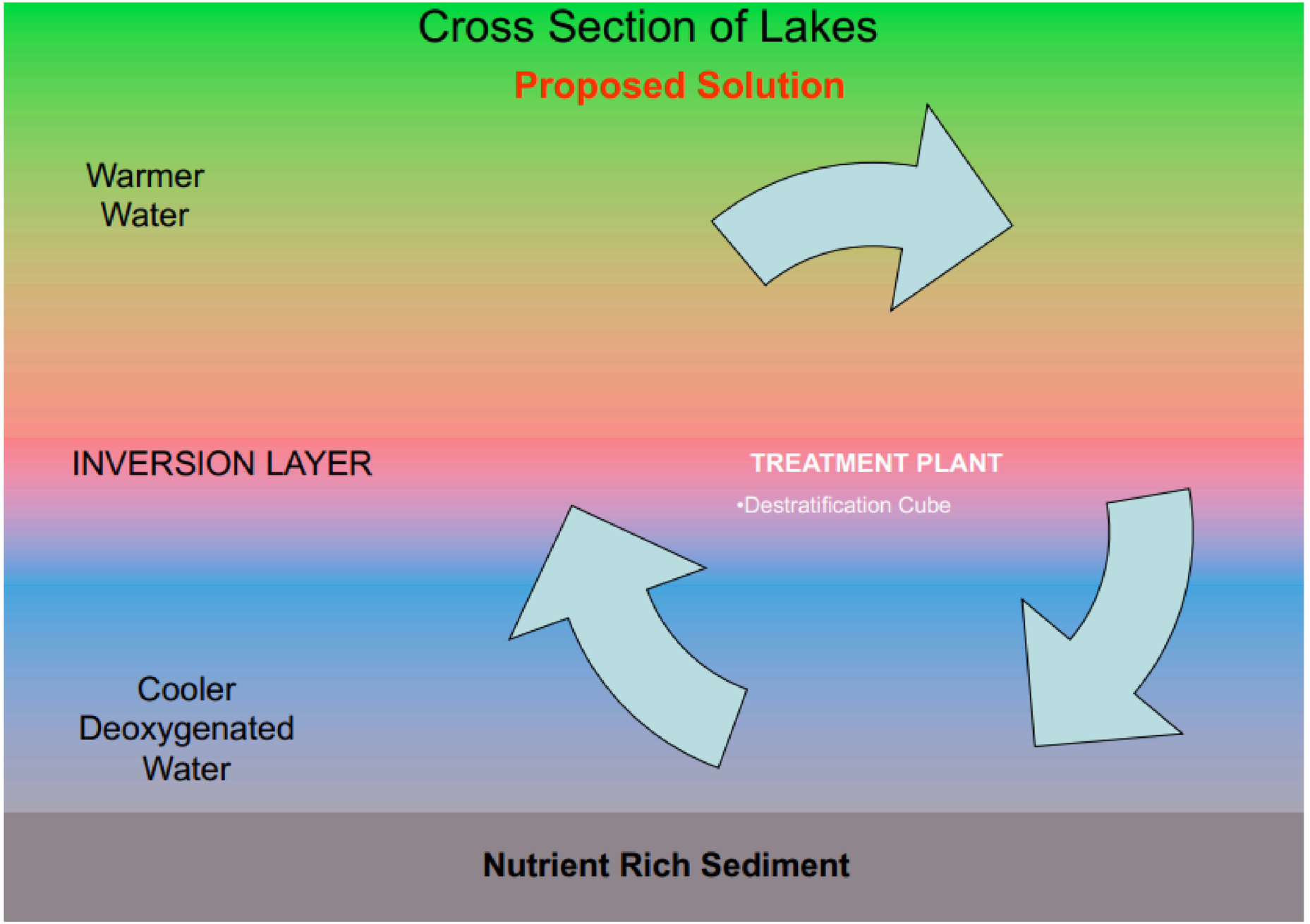
Materials

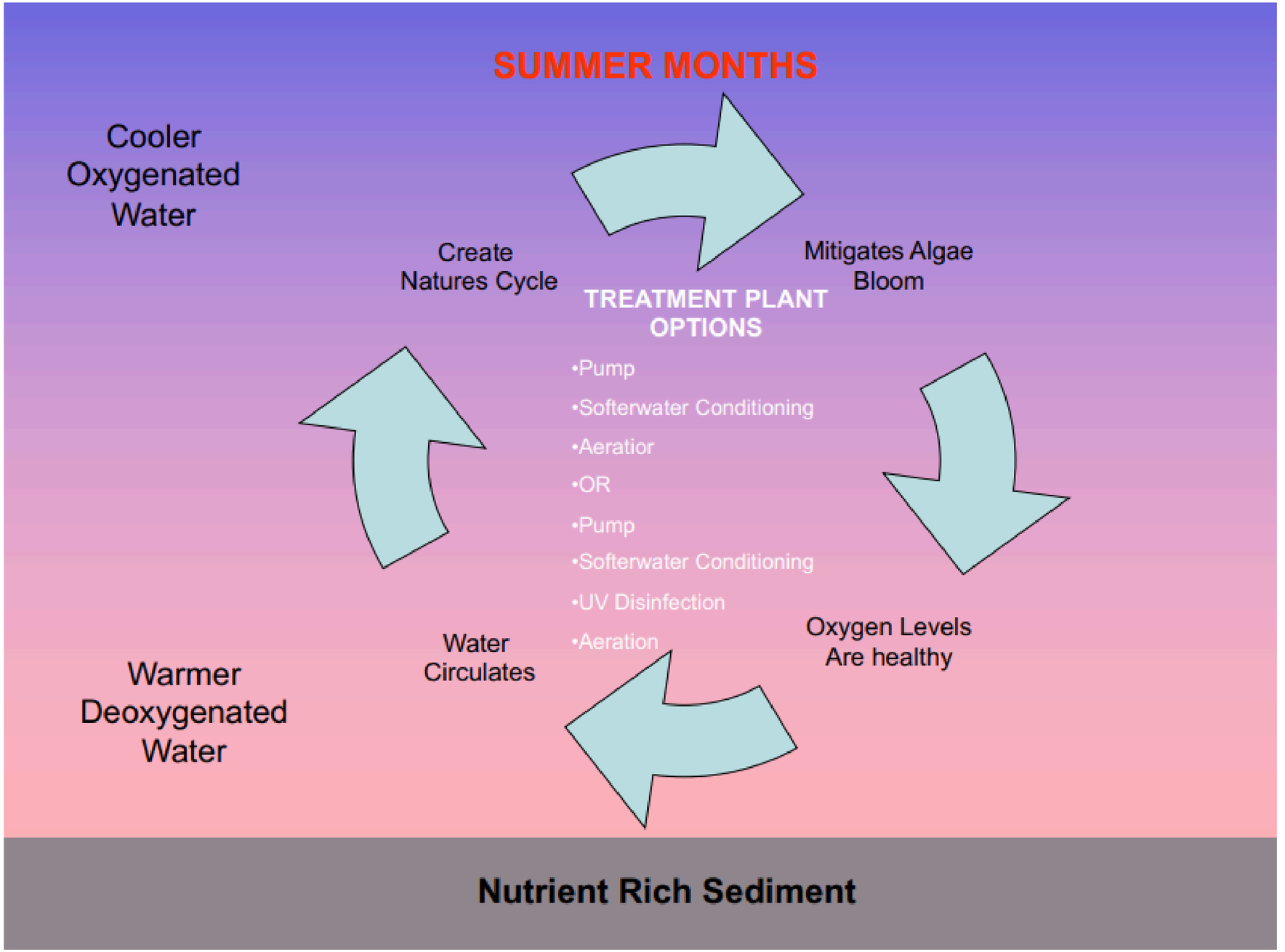
Pump housing	1.4301
Impeller	1.4307
Shaft	1.4057
Shaft seal	BQ7EGG
Gasket material	EPDM

Information for order placements

Weight approx.	136 kg
Item number	4246779

PUMP SPECIFICATIONS


Cross Section of Lakes
Proposed Solution
Warmer Water
INVERSION LAYER
TREATMENT PLANT
•Destratification Cube
Cooler Deoxygenated Water
Nutrient Rich Sediment


SUMMER MONTHS
Cooler Oxygenated Water
Create Natures Cycle
Mitigates Algae Bloom
TREATMENT PLANT OPTIONS
•Pump
•Softerwater Conditioning
•Aeratior
•OR
•Pump
•Softerwater Conditioning
•UV Disinfection
•Aeration
Water Circulates
Oxygen Levels Are healthy
Warmer Deoxygenated Water
Nutrient Rich Sediment

THANK YOU!

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