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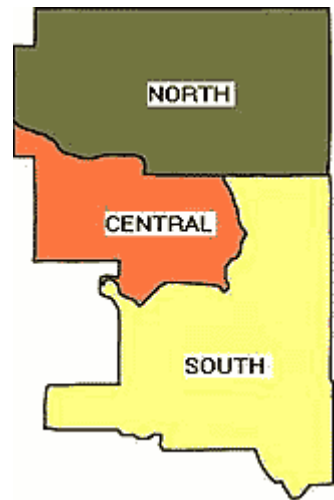
# Water Management Operating Structure

## How We Operate

The Parks Business Unit has seven Divisions: Resource Management, Operations North, Operations South, Operations Central, Planning & Development South, Planning & Development North, and Public Education & Programs.

Resource Management has a Water Management section that has responsibility for development of policies and long term strategy, construction specifications, design plan approval, water cost budgets, capital construction projects (new systems, water meter installations etc), and oversight and operation of the Irrigation Central Computer Control.

The three Operations Divisions each have an Irrigation section. The staff in these work units do all the maintenance work on the underground irrigation systems in their respective divisions. This includes springtime turn on, repair of all components on the system, and fall turn off.



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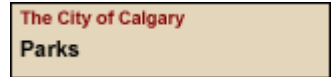
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## ICC System Components

### PC Computer (Irrigation Central Control)

- Contains Irrigation Central Control Software
- Communicates to field controllers via radio using Field Interface Unit (FIU)

A version of an IRRInet field unit containing a circuit card connected to a computer port



#### Related Links

- [Irrigation Control \(Motorola Inc.\)](#)
- [ARAD](#)

### IRRIInet Remote Terminal Unit (RTU)

- Is a master field controller
- Controls valves at the field site
- Controls remote or slave controllers (Scorpio)
- Has resident intelligence in Central Processing Unit (CPU)

### Scorpio Controller

- Remote controller operated by a master IRRInet controller
- Controls valves at the field site
- Reports back to IRRInet
- In remote operation has limited resident intelligence
- Can be set up as a "standalone" controller (resident intelligence without remote control)

### Hydrometer or Meter/Master Valve (MMV)

- Wired to input on controller
- Controller reads when the switch opens and closes
- Controller calculates flow rate as irrigation system waters

## Remote Sensors

### Rain Switch

- Stop irrigations during localized events
- Switch circuit opens when wet
- Connected to input on controller
- Controller reads open circuit and will pause program
- Installed at IRRInet

### Freeze Switch

- Prevent frost damage
- Switch circuit opens at or below 3 degrees Celsius (37.4 Fahrenheit)
- Connected to input on controller
- Controller reads open circuit and will stop program
- Installed at IRRInet

## Weather Station

- Collects data on daily weather
- ICC calls daily via telephone
- Receives data and calculates daily Evapotranspiration (ET)  
ICC converts ET to Water Factor (WF)  
% adjustment and dispatches to (RTU)

## Physical Plant

- Server (Windows 2000 Pro, runs Motorola ICC software and Aqua Engineering Weather 2000 software)
- Motorola Field Interface Unit (FIU)
- 800 Mhz Base station radio
- 800 Mhz fully redundant repeater (Petro Canada building)
- 110 IRRInets (currently using Super CPU)
- 435 Scorpio's (incl. linked units, 17-32 station)
- 4 dual monitor workstations (Windows 2000 Pro)
- 3 laptops (Windows 2000)
- 10 Field Programming Keyboards

- Approx. 6 800 Mhz DTMF radios
- 5 VHF radios tuned to Scorpio frequency



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## ICC Overview

Since 1992 Parks has been implementing new ways to manage its water use:

- Installing water meters on all park irrigation services
- Centralized computer control

The Irrigation Control Center provides the system operator with the tools needed to manage the irrigation system. A powerful computer and equally powerful software permit the operator to view the status of irrigation schedules, equipment performance, and more. Windows based technology provide an easy point-&-click interface to the operator. Commands may be sent to modify the otherwise automatic operation of the irrigation system. Reports on the operation of the irrigation system may be generated.



### Related Links

- [Irrigation Control \(Motorola Inc.\)](#)
- [MOSCAD \(MOTOROLA SCADA\)](#)

- SCADA (Supervisory Control And Data Acquisition)

A computer system for gathering and analyzing real time data. SCADA systems are used to monitor and control a plant or equipment in industries such as telecommunications, water and waste control, energy, oil and gas refining and transportation. A SCADA system gathers information, such as where a leak on a pipeline has occurred, transfers the information back to a central site, alerting the home station that the leak has occurred, carrying out necessary analysis and control, such as determining if the leak is critical, and displaying the information in a logical and organized fashion.

- Construction of a weather station

network to provide real-time data to the Central Control System

### Results

- Central control is saving an average of 44% on water use
- Improve turf quality
- Reduce herbicide & pesticide use
- Reduce staff costs for watering sites



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# Operational Goals

- Conserve water (less water use per hectare)
- Horticultural assets protected and enhanced
- Longer lifecycle for irrigation systems and reduced operating costs
- Effective drought management plan to address water restrictions
- Compliant with requirements of ISO 14001
- Environmental Management System program applicable to water management
- Partnerships in place to help build knowledge and learning around best management practices



## Related Links

- [ISO \(International Organization for Standardization\)](#)
- [ISO 14001](#)



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