Sacramento's Biosolids Management Program Through

Design-Build Approach

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SCAP

Biosolids Emerging Technology Workshop

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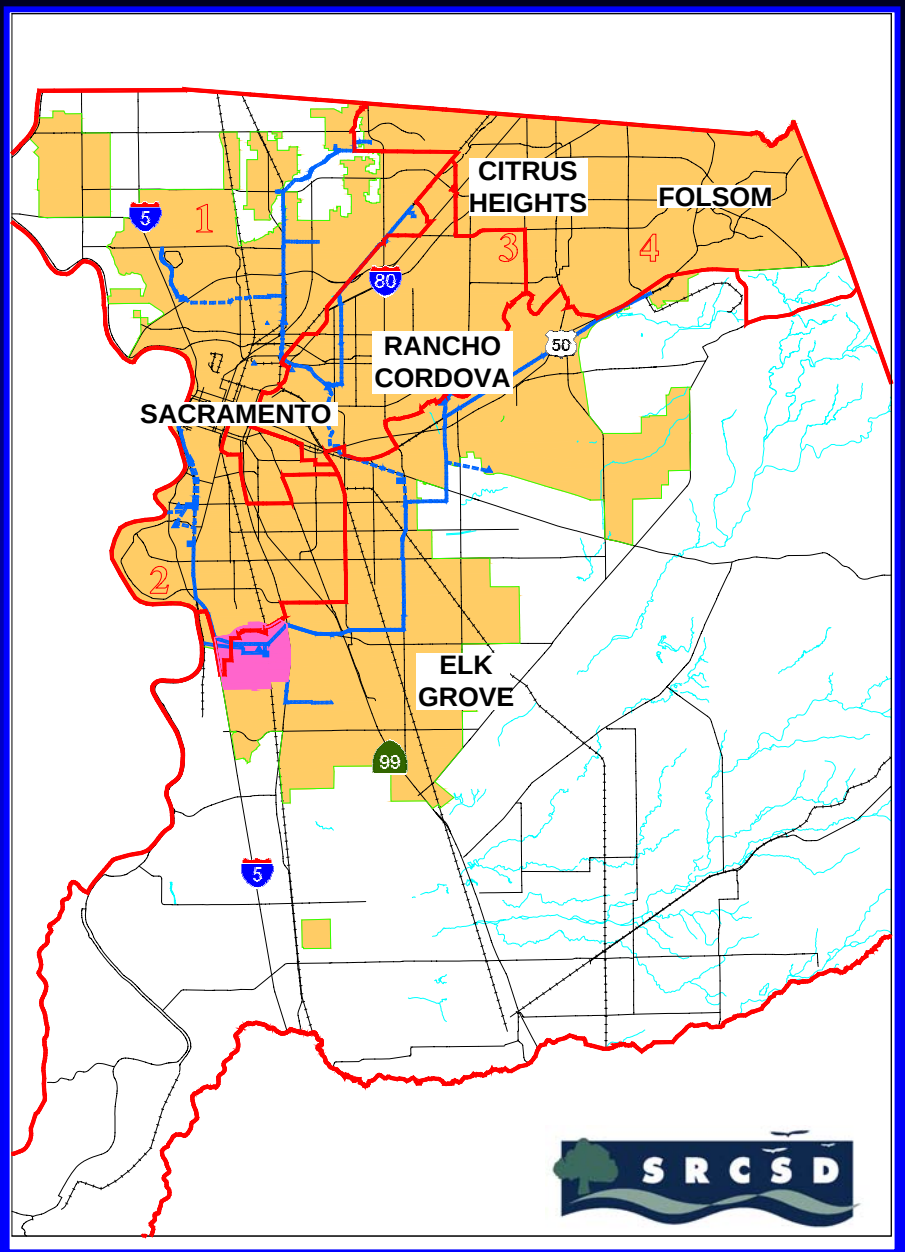
SRCSD

Presentation Outline

- SRCSD Background
- Historical Biosolids Program
- Drivers for Biosolids Recycling Facility
- Why DBOO?
- BRF Agreement Highlights & Project Costs
- Issues To Considered & Lessons Learned
- Questions

SRCSD Background



Sacramento Regional County Sanitation District

- Wastewater treatment & conveyance for over 1.1 M people
- 181 MGD permitted capacity

SRWTP

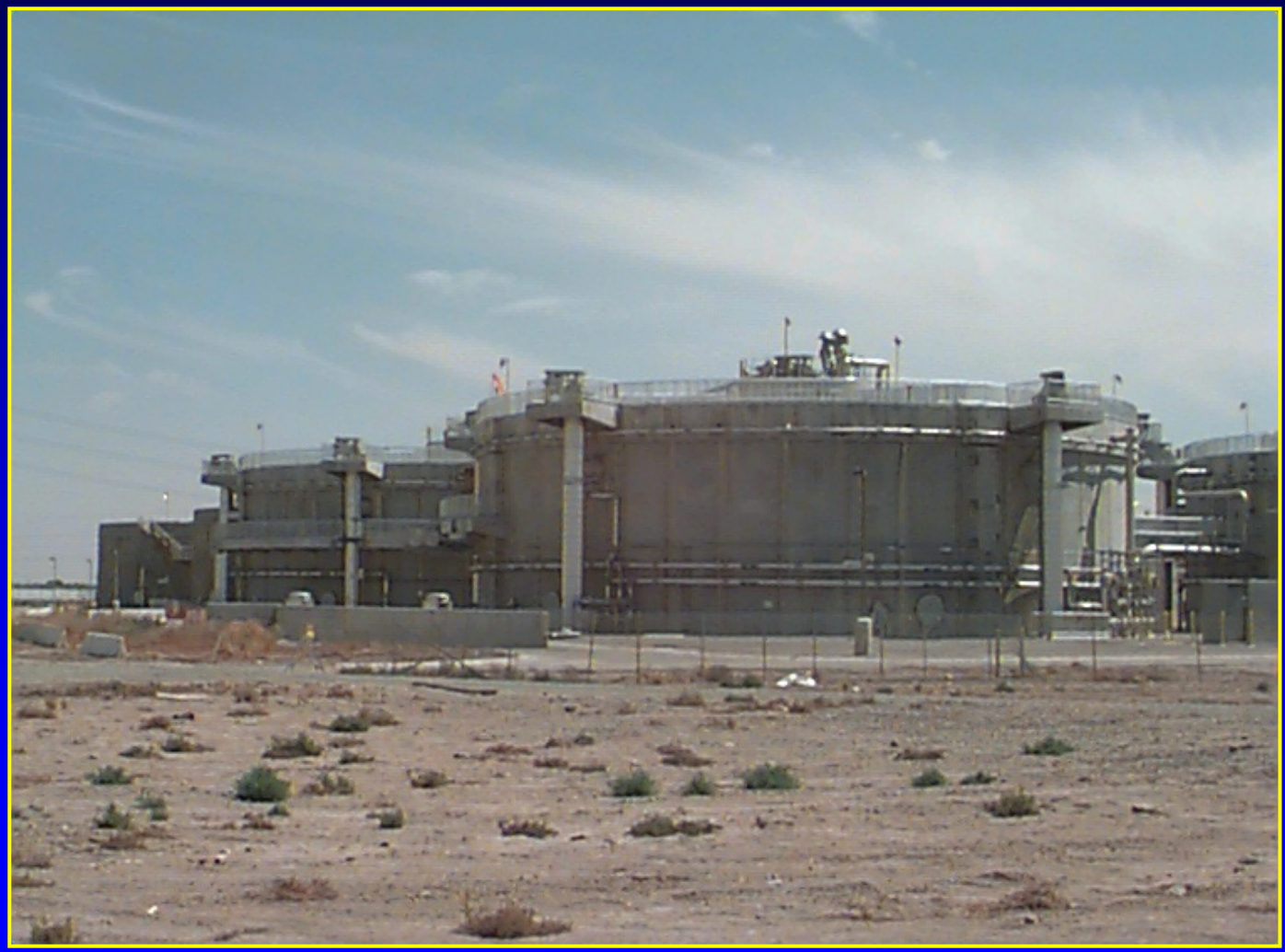
SRWTP Biosolids

- Biosolids Production

- Class B Biosolids - Anaerobic Digestion
- Low Metals

Historical Biosolids Program

Anaerobic Digestion



Solids Storage Basins

Dedicated Land Disposal

Drivers For
Biosolids Recycling Facility

SRWTP Biosolids Program Objectives

RWQCB Waste Discharge Requirement:

- **discontinue use of existing DLDs by November, 2001**

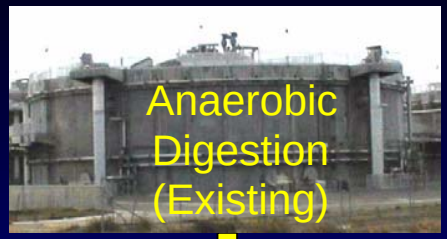
- Sustainable & Reliable
- Diversification
- Recycling if at “reasonable” cost

Elements of Diversified Biosolids Program

- District Biosolids Management Options
  - Disposal on lined dedicated land disposal units
  - Land application on publicly owned land (offsite land purchase)
  - Landfill & landfill cover
- Private Sector Biosolids Management Options
  - Class A treatment option - to recycling markets
  - Class B land application

LDLD/BRF Scenarios Considered

	BRF Size (dtpd)	Number of L-DLDs	Number of DLD Closures
Scenario 1	**0**	**4**	**1**
Scenario 2	**20**	**3**	**2**
Scenario 3	**45**	**2**	**3**



~ 25%

Biosolids
Recycling Facility

20 Dry Ton/Day BRF

"Beneficial Use"

3 Lined DLDs

Why DBOO
Biosolids Recycling Facility?

Why DBOO?

- Marketing of biosolids product
  - to be sold or distributed
- Private sector experience
  - can meet marketing needs
  - modify operations for optimum product quality
- Contractual single point of contact
  - all functions; design, construction, finance, ops.

Why DBOO? (cont.)

- Reduced District risk
  - no service fee payment until facility operational and accepted by District
- Bonding capacity preserved
- Financial protection against project failure

Results of RFQ/SOQ Process

- Received 14 SOQs
  - Short listed 5 teams and 6 technologies
- Received 4 proposals
  - One proposal deemed non-responsive to the RFQ
  - Site visits to 6 facilities
- Selected highest ranked proposal for negotiations
  - if necessary, would negotiate with second ranked team

Technologies included:

fertilizer pellets, biosolids to oil, chemical stabilization, compost, land application

Short Listed Teams

	Proposing Team Leader	Technology	Product Use
1.	Berlie Technologies, Inc.	heat drying	fertilizer pellets
2.	Earth Tech	chemical stabilization	soil amendment
3.	Minergy Corporation	glass aggregate	road base, roofing shingles
4.	Synagro WWT, Inc.	heat drying	fertilizer pellets
5.	US Filter	heat drying	fertilizer pellets
6.	US Filter	invessel compost	soil amendment

Facilities Visited

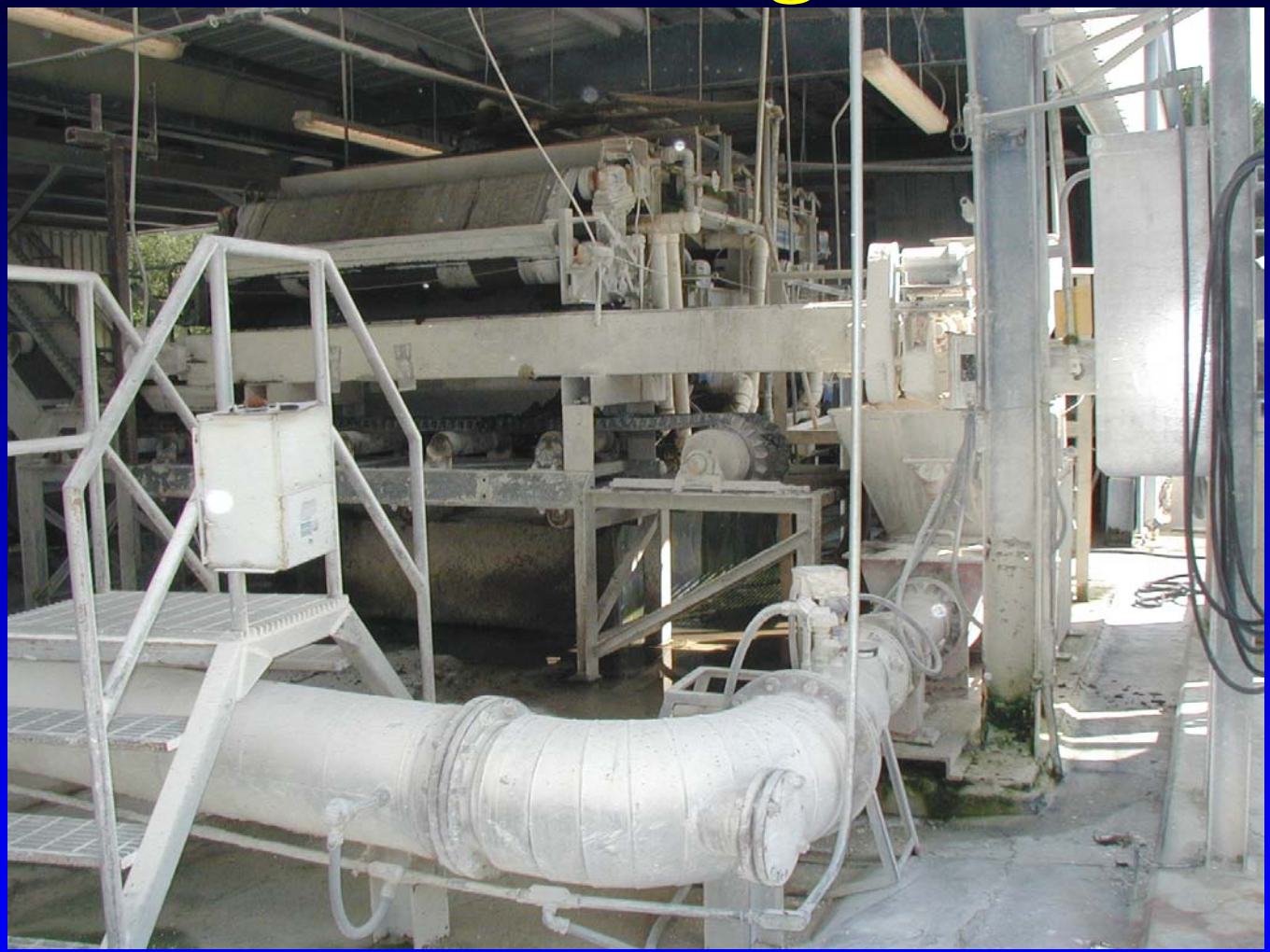
The District and Malcolm Pirnie visited 6 facilities.

Proposer Team	Facility Location	Technology	Average Quantity of Finished Product Generated (dtpd)
Earth Tech	Kingwood, Texas	Bioset pasteurization	10
Earth Tech	Kissimmee, Florida	Bioset pasteurization	28
Synagro	Baltimore, Maryland	Seghers Pelletizer	55
Synagro	Bayville, New Jersey	Andritz Drum Dryer	25
USFOS	Forest City, North Carolina	SludgeMASTER Dragon Dryer	10
USFOS	Toronto, Canada	Seghers Pelletizer	80 (capacity) (not yet operational)

Earth Tech – Kingwood, TX

Front view of the facility.

Earth Tech – Kingwood, TX



Bioset process (foreground) and belt press (background).

Earth Tech – Kissimmee, FL

View of the facility.

Earth Tech – Kissimmee, FL

Bioset blending area (lime, sulfamic acid, and dewatered biosolids).

Synagro – Baltimore, MD

Centrifuges (foreground) and Seghers Pelletizers (background).

Synagro – Baltimore, MD

Side view of a Seghers pelletizer (includes access portals and view ports).

Synagro – Bayville, NJ

Side view of the facility (includes finished product storage silos).

Synagro – Bayville, NJ

Biosolids feed line into an Andritz Direct Drum Dryer.

Synagro – Bayville, NJ

Burners (for the dryers).

US Filter – Forest City, NC

Side of the facility (includes the finished product storage silo and truck loading area).

US Filter – Forest City, NC

US Filter Dragon Dryer.

US Filter – Toronto, Canada

View of the facility (includes finished product storage silos).

US Filter – Toronto, Canada

Side of the pelletizer (picture taken from the top of the dryer).

US Filter – Toronto, Canada

Inside view of a pelletizer (picture taken perpendicular to the side of a dryer from the access door).

BRF Agreement Highlights

SRCSD/Synagro Agreement Highlights

- 20 Year Contract, 20 dtpd
- Private financing & ownership
- Design (B&V), Construction (Whiting Turner), Operations & Maintenance (Synagro)
- Andritz centrifuge/heat dryer

Agreement Highlights (cont.)

- Service fee payments begin after acceptance test
- Company responsible for permitting and regulatory compliance
- Company responsible for marketing
- Odors & emissions - BACT, completely enclosed operation

BRF: Implementation Schedule

- Contract approved - July 2002
- Design/Permitting Complete - Spring 2003
- Construction Complete - mid/late – 04’

Performance Testing Complete
and Operations Begin - Oct. 2004

Contract Project Costs

BRF Project Costs – Capital

- Site Improvements: $1.2 M
- Facility: $13.7 M
  - Engr & Design $1.1 M
  - Permitting $0.1 M
  - Equipment $6.4 M
  - Construction $6.1 M
- Other $4.8 M
  - Finance Cost $3.0 M
  - Admin., Insur., Accp. Test $1.8 M

Total Fixed Design Build Price: $19.7 M

Annual O&M

- O&M Cost: $2.4 M (2002 $)
- Electricity: $0.19 M
- Natural Gas: $0.39 M

Note: Electricity & gas are pass through costs

Costs (continued)

- Annual Service Fee: $5.0 M

  (2005 dollars)

- Cost per dry ton: $429

  (NPV)

Economies of Scale
(Proposal Costs)

20 DTPD BRF

- Total Fixed DB Price: $21.2 M ($19.7 M Contract)
- Annual O & M Cost: $2.5 M ($2.4 M Contract)

45 DTPD BRF

- Total Fixed DB Price: $24.8 M
- Annual O & M Cost: $3.2 M

Biosolids Recycling Facility Under Construction

April 2004

April 2004

April 2004

April 2004

April 2004

Andrtiz Rotary Drum Dryer

Biosolids Recycling Facility

Issues to Consider & Lessons Learned

Issues / Lessons Learned

- Risk allocation
- Permitting
- Financing
- Labor, prevailing wages
- Performance based contract & inspection
- Legal & negotiations
- CEQA

Issues & Lessons Learned (cont.)

- Procurement process
- Facility transfer
- Allowable technologies
- Energy consumption & price risk
- Performance testing & acceptance
- Emissions & offsets
- Odor Control

Issues & Lessons Learned (cont.)

- Operator certification
- BRF input & return streams
- Insurance, bonding, guarantees
- Underground
- Safety
- Public outreach
- Contractor coordination

Conclusions

- Biosolids recycling adds diversification to District program
- Diversification has a cost – more costly than DLDs
- Private financing is insurance against project failure – but adds cost

Conclusions (cont.)

- DBOO can reduce municipality risk
- Evaluation should not be based solely on price - want best value project, not lowest cost
- Public agency team expertise required

Questions?

Procurement Team

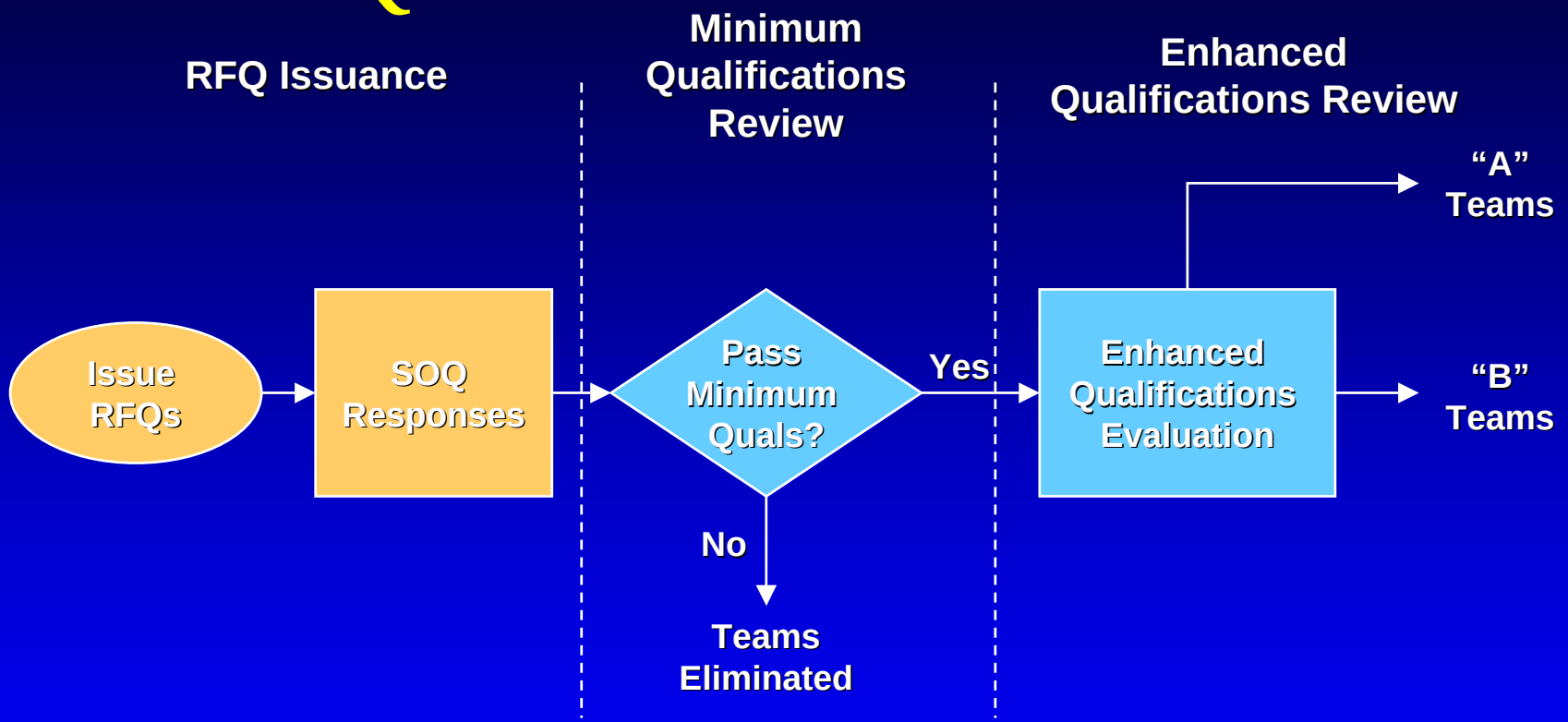
- Sacramento Regional County Sanitation District
  - Diverse and experienced staff
- Malcolm Pirnie, Inc.
  - Extensive experience with the DBO/DBOO procurement process
  - Assisted District from strategy development through contract negotiations

BRF Procurement Overview

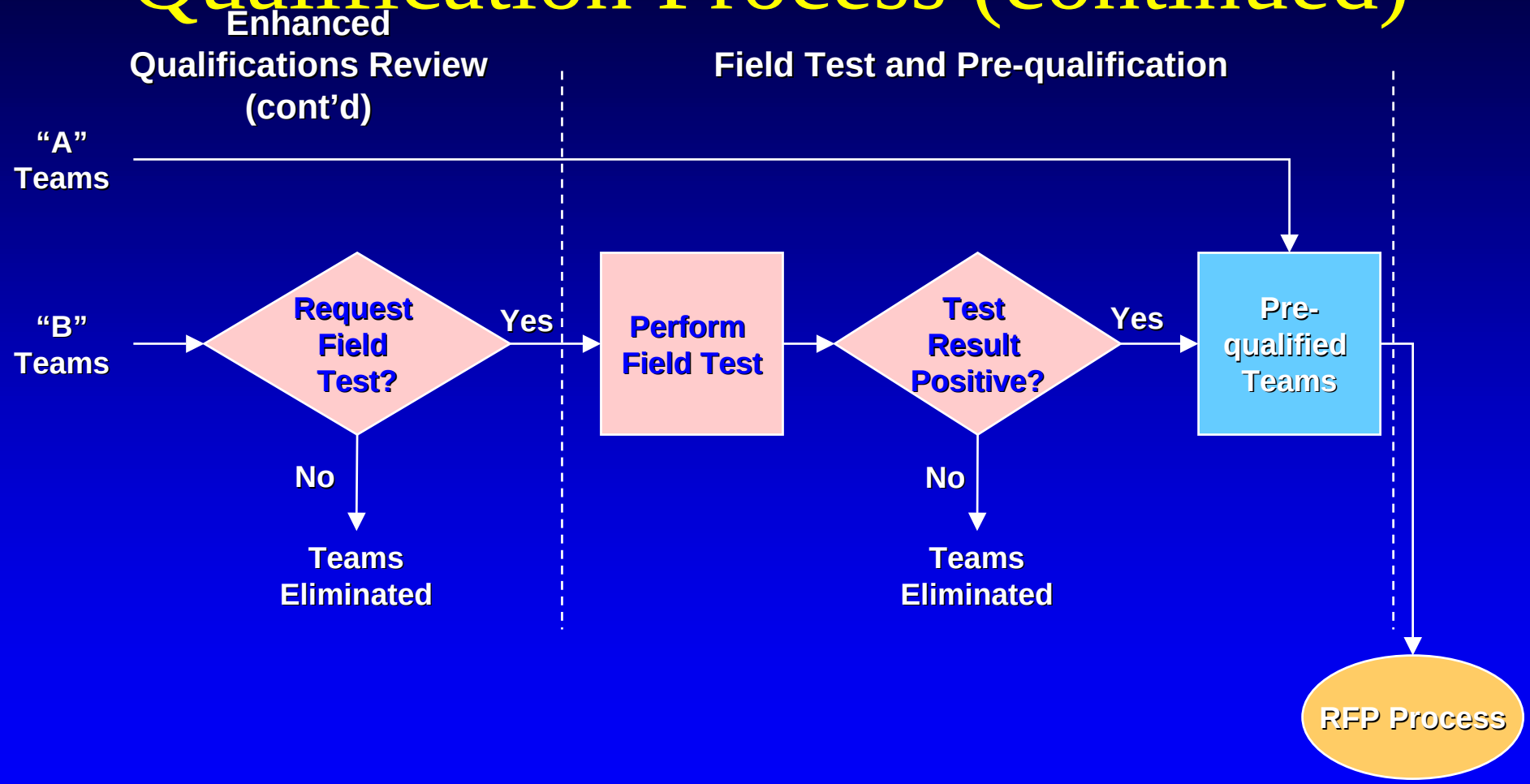
Two Stage Selection Process:

- Phase I
  - Request for Qualifications
  - Statements of Qualifications evaluation
- Phase II
  - Request for Proposals
  - Financial analysis of Biosolids Management Program and BRF size selection
  - Proposal evaluation
  - Site visits
  - Service contract negotiations

Qualification Process



Qualification Process (continued)



Request for Qualifications (RFQ)

- Goal of RFQ
  - Present risk allocation
  - Determine market interest
  - Pre-qualify 3-6 DBOO teams
- Contents of RFQ
  - Project scope
  - Project constraints (risk, cost, etc.)
  - Evaluation process and criteria
  - Required guarantees

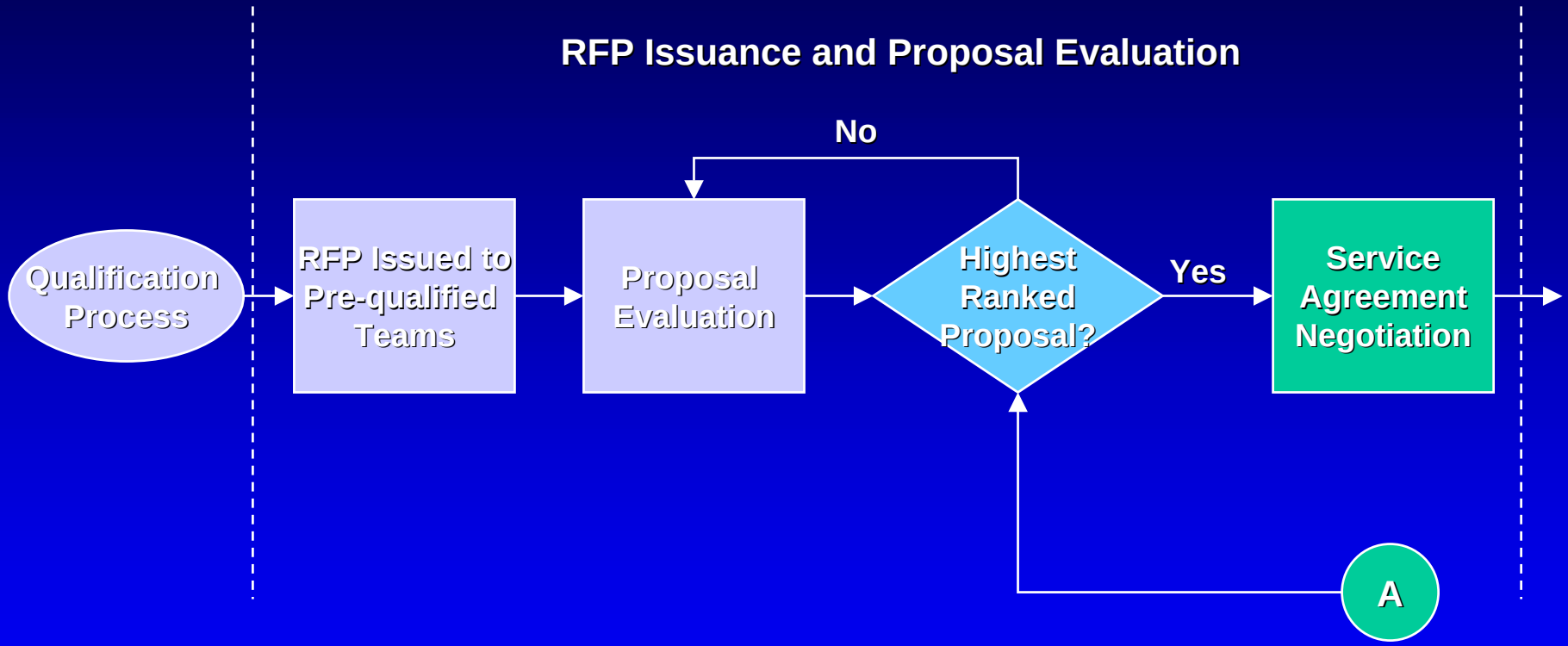
Statement of Qualifications (SOQ) Evaluation Process

- Minimum qualifications
  - DBO
  - Biosolids
  - Project personnel
  - Financial
- Enhanced qualifications
  - Project experience
  - Technology viability
  - Project team capabilities
  - Financial capabilities
- Process yields pre-qualified teams

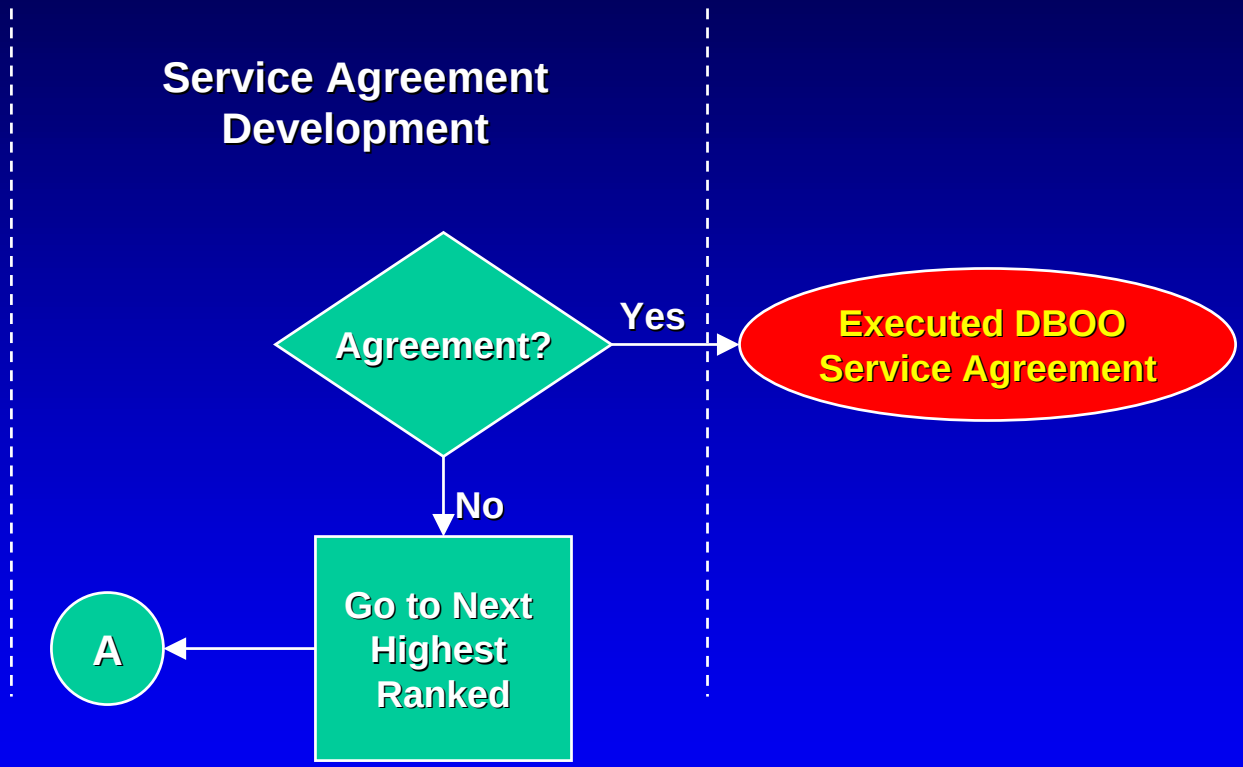
Qualifications Evaluation Criteria

Category	Criteria Weighting
Project Experience - Design, construction, operation experience - Biosolids Management	20
Technology Viability - Technology operating experience - Regulatory compliance	30
Project Team Capabilities - Project team structure - References - Prior experience working as a team	20
Financing Capabilities - Private sector internal financing - Project guarantor qualifications	30
	100%

Proposal Process



Proposal Process (continued)



Request for Proposals (RFP)

- Goal of RFP
  - Facilitate thoughtful, thorough proposals
- Contents of RFP document
  - Detailed project scope
  - BRF Input specifications
  - Performance standards
  - Selection process / evaluation criteria
  - General design requirements / specifications
  - Submittal requirements

Proposal Evaluation Criteria

Category	Criteria Weighting
Technical Reliability and Viability – Technical reliability – Technical viability	20
Environmental Impacts	15
Price Competitiveness of Service Fee	40
Financial Qualifications, Financial Plan, Legal Standing, and Contract Position – Financial qualifications* – Financing plan – Legal standing* – Contract position	20
Proposer Team Experience*	5
Total	100

Evaluated as part of the SOQ evaluation process.

Service Contract Negotiations

- Negotiating strategies
  - Single team
  - Simultaneous
- Legal Assistance
  - Draft service Contract provided by outside legal counsel
  - Negotiations performed by District legal staff

Energy

- Electrical consumption: 3,600,000 KW hours
- Electrical demand: 825 KW

- Natural gas: 640,000 therms/year